

4/6.2

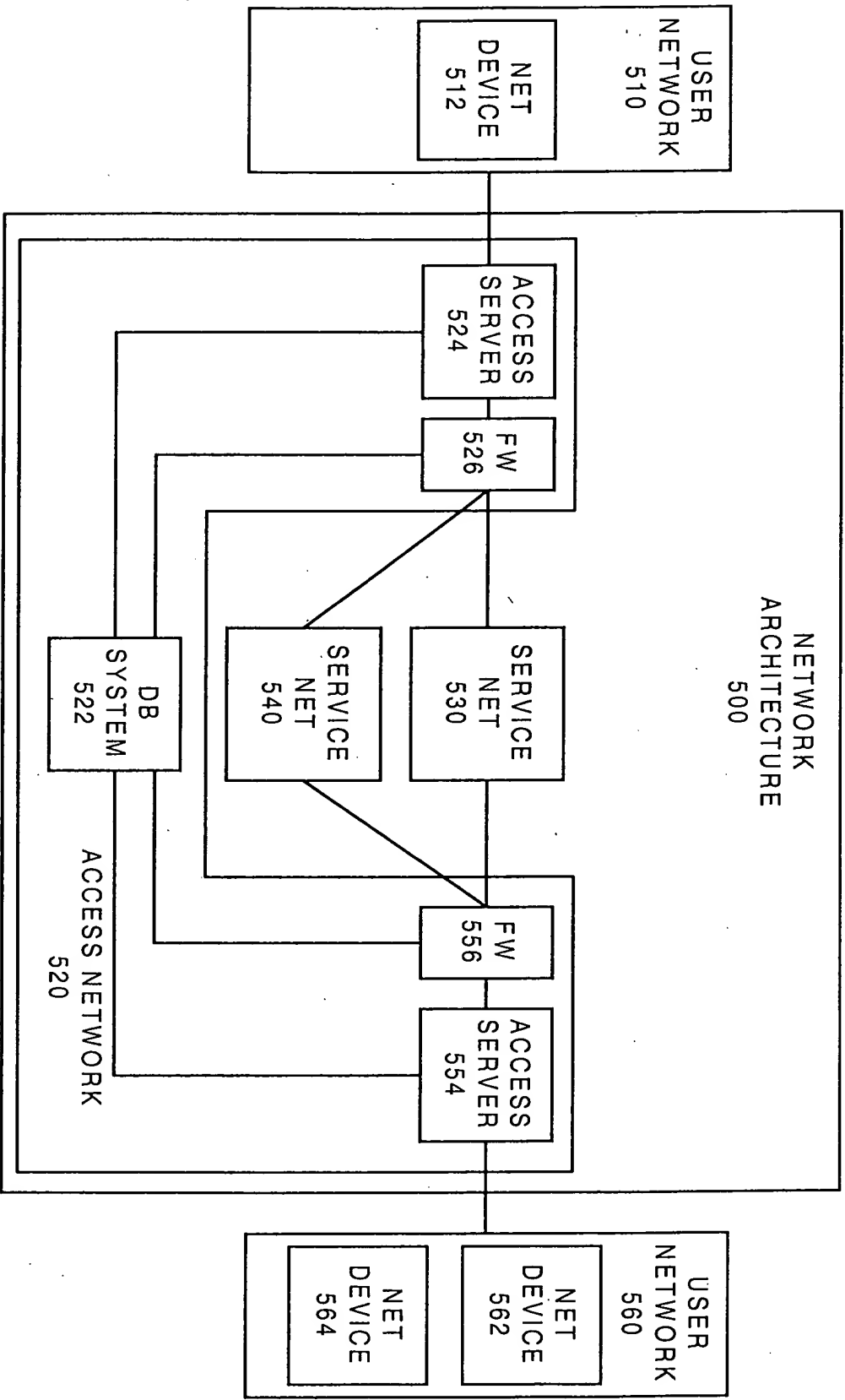


FIG. 5

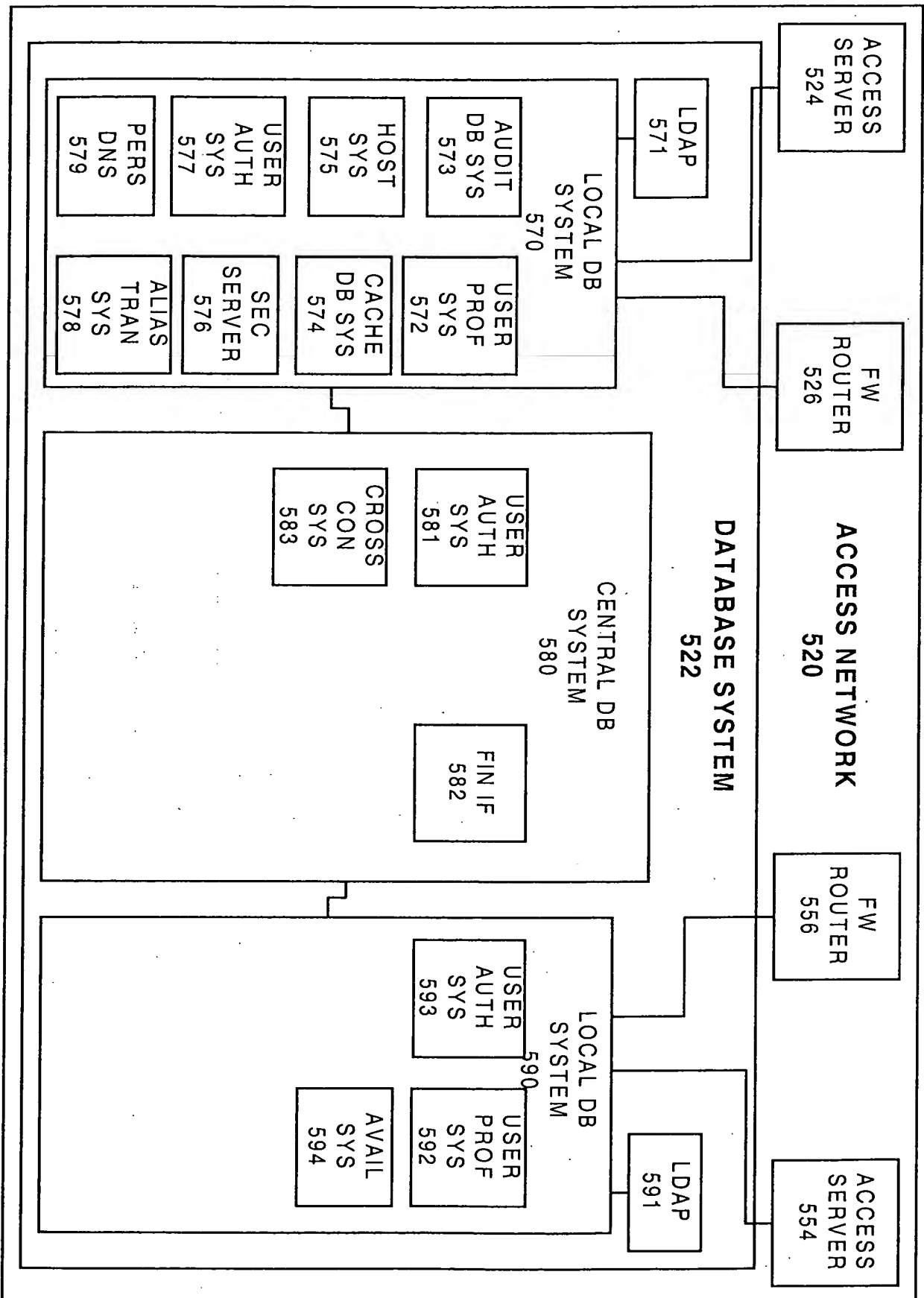


FIG. 6

US 2005/023000 A1

USER ID	PASSWORD	NAME	ACCOUNT NUMBER	SERVICES	ADDRESS	BILLING CODE	CLASS	GROUP	SHELL	MACROS

FIG. 7

09576300, 0952300

00576300 002300 00576300

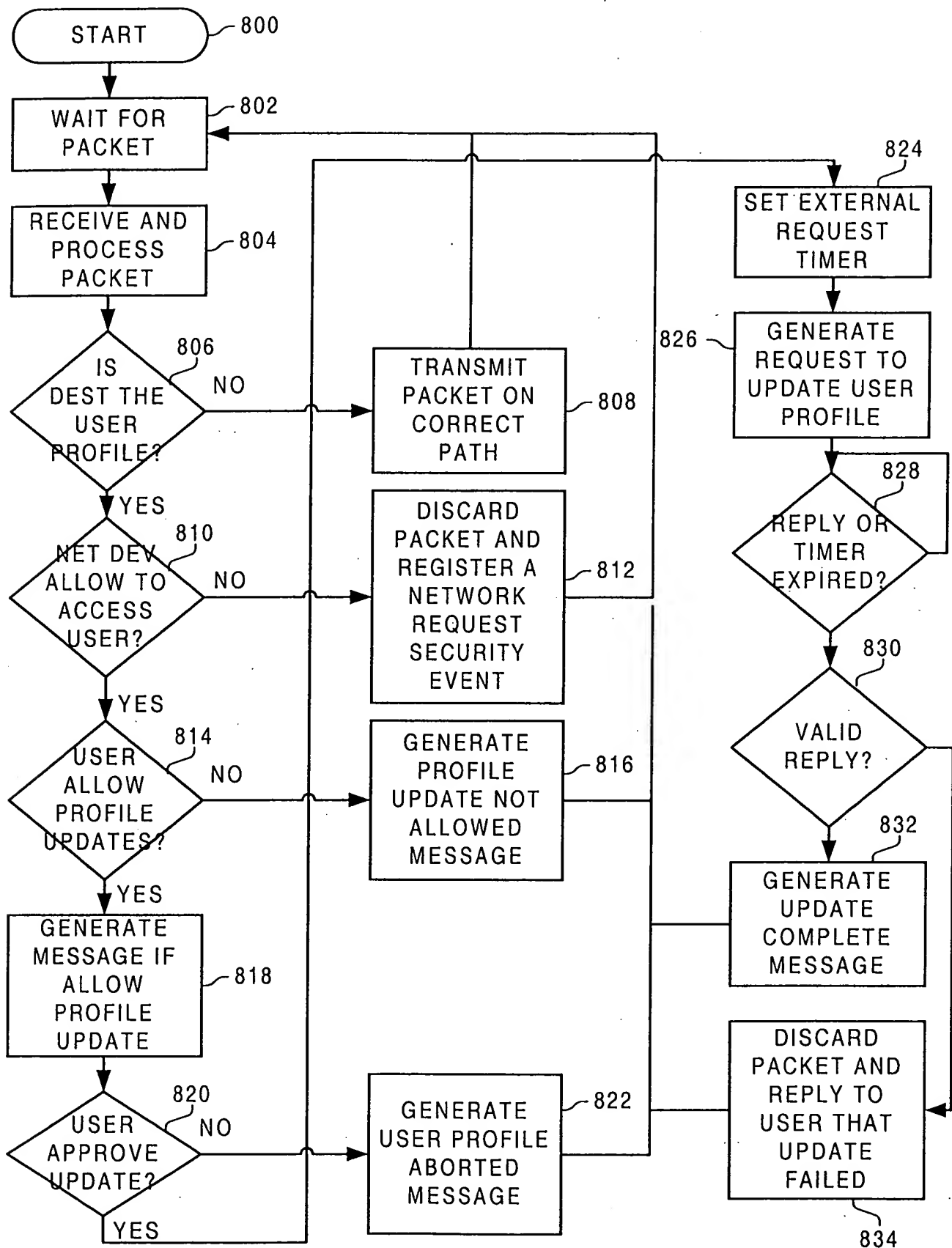


FIG. 8

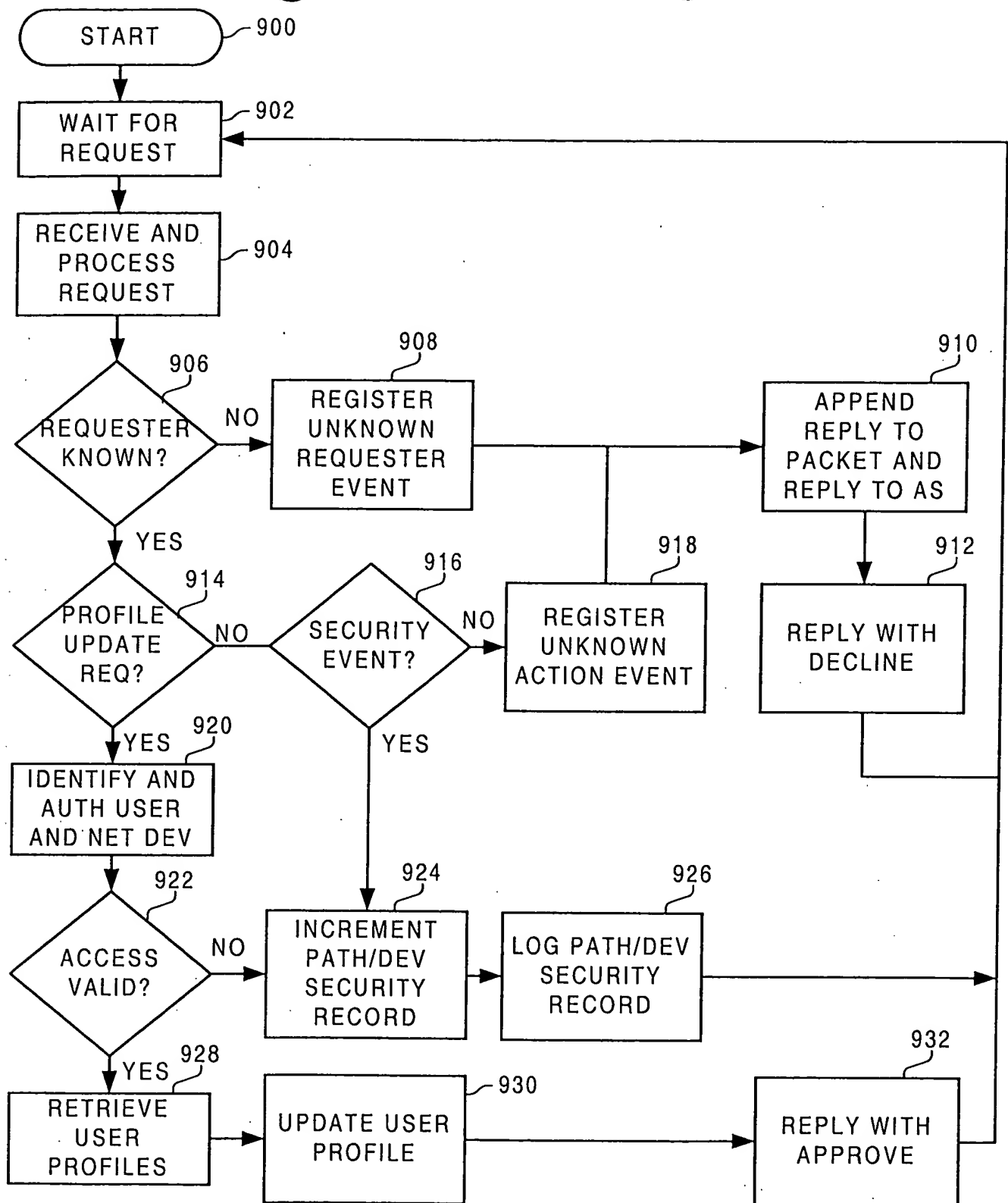


FIG. 9

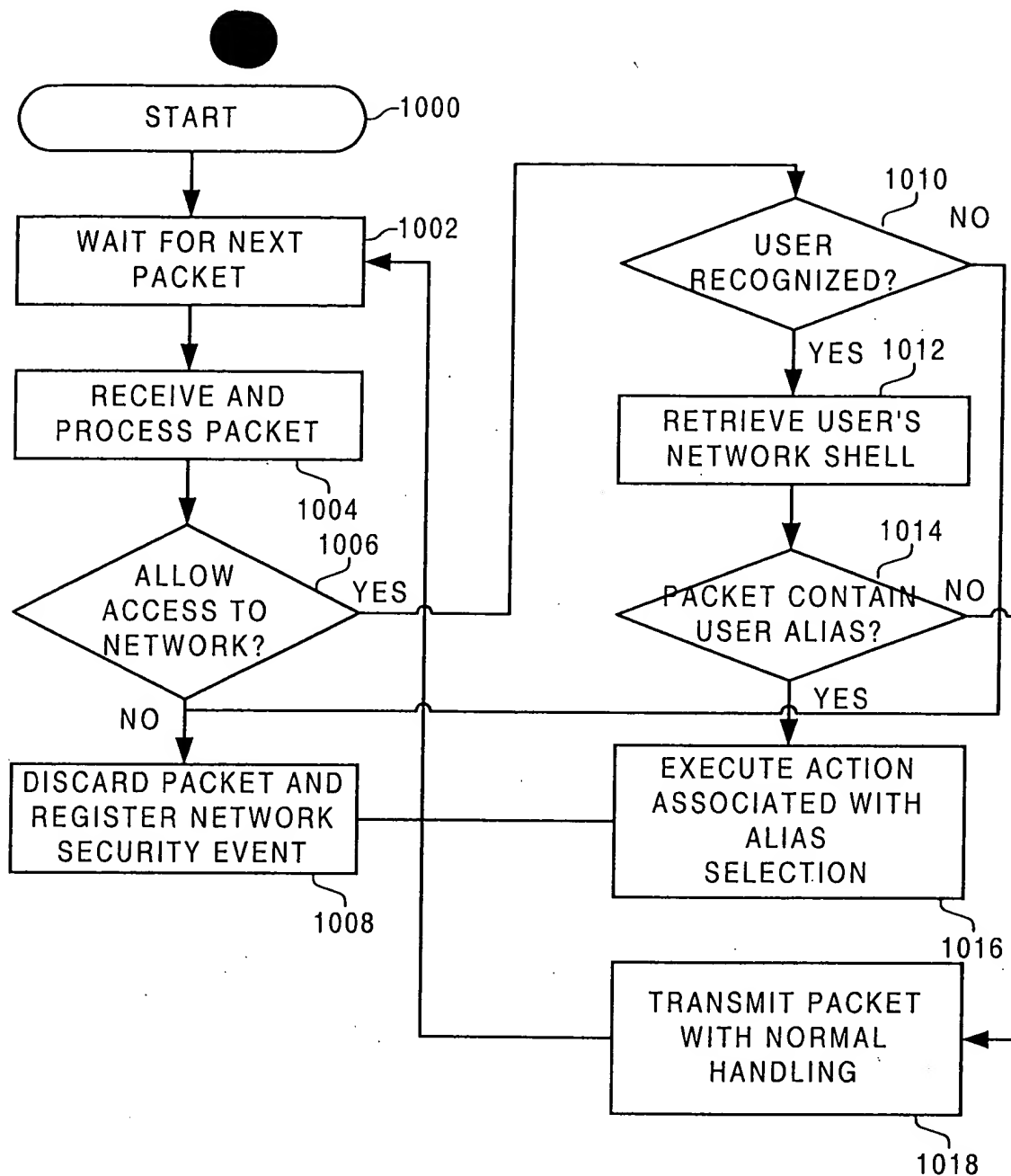


FIG. 10

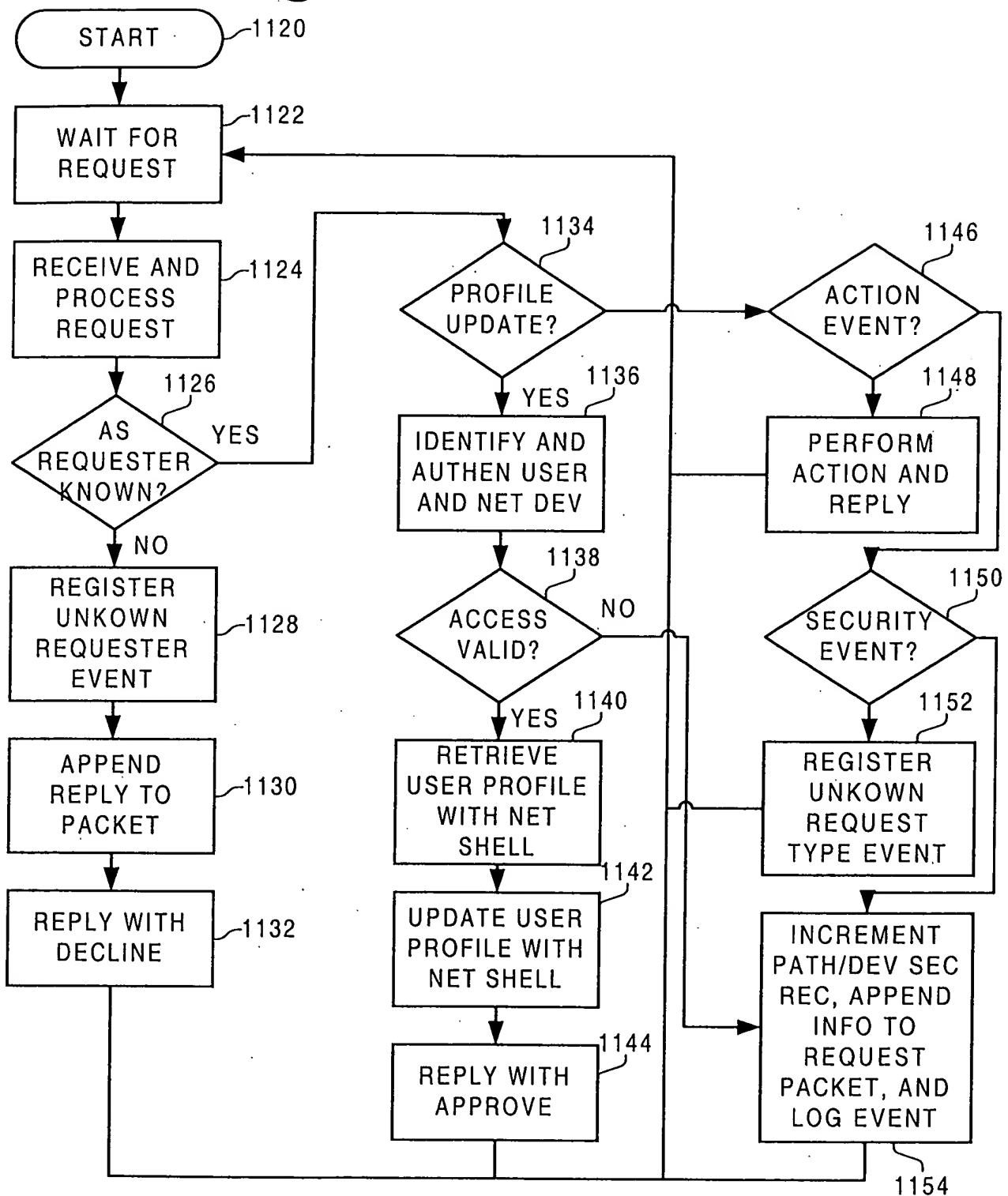


FIG. 11

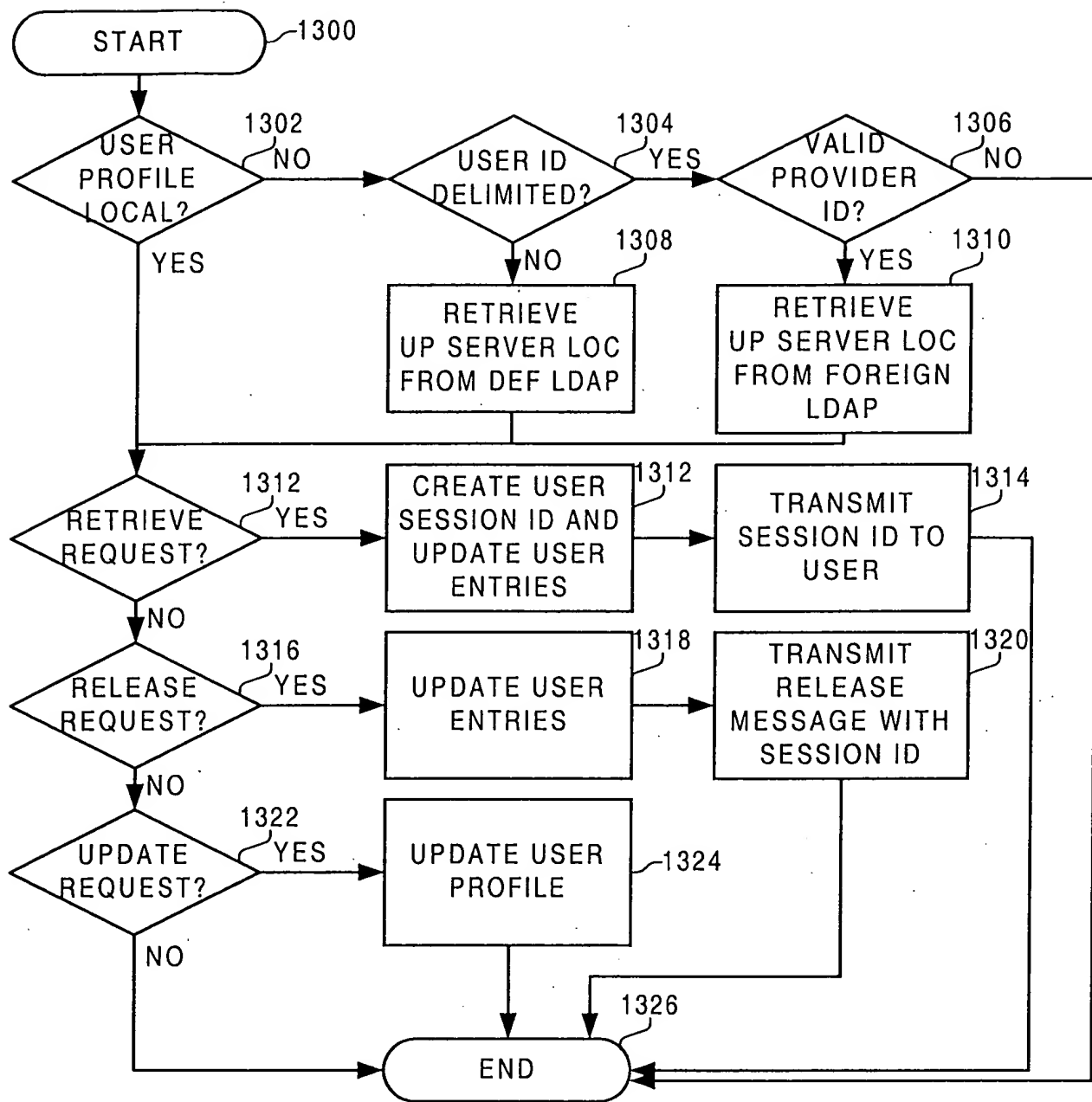


FIG. 13

The diagram illustrates a distributed system architecture with three main columns of entities: **DEVICE**, **USER**, and **SERVICE**. Each entity is represented by a box containing the following fields:

- DEVICE 1**: PUBLIC KEY, PRIVATE KEY, DEV SESSION ID, USER SESSIONS, SERVICE SESSIONS. (Label 1402 points to the top of the box)
- DEVICE 2**: PUBLIC KEY, PRIVATE KEY, DEV SESSION ID, USER SESSIONS, SERVICE SESSIONS. (Label 1404 points to the DEV SESSION ID field)
- DEVICE N**: PUBLIC KEY, PRIVATE KEY, DEV SESSION ID, USER SESSIONS, SERVICE SESSIONS. (Label 1406 points to the DEV SESSION ID field)
- USER A**: PUBLIC KEY, PRIVATE KEY, USER SESSION ID, DEV SESSIONS, SERVICE SESSIONS. (Label 1408 points to the top of the box)
- USER B**: PUBLIC KEY, PRIVATE KEY, USER SESSION ID, DEV SESSIONS, SERVICE SESSIONS. (Label 1410 points to the top of the box)
- USER N**: PUBLIC KEY, PRIVATE KEY, USER SESSION ID, DEV SESSIONS, SERVICE SESSIONS. (Label 1412 points to the USER SESSION ID field)
- SERVICE A**: PUBLIC KEY, PRIVATE KEY, SRVC SESSION ID, USER SESSIONS, DEVICE SESSIONS, SUB SERVICE SESSIONS, OWNING SRVC. (Label 1414 points to the top of the box)
- SERVICE B**: PUBLIC KEY, PRIVATE KEY, SRVC SESSION ID, USER SESSIONS, DEVICE SESSIONS, SUB SERVICE SESSIONS.
- SERVICE N**: PUBLIC KEY, PRIVATE KEY, SRVC SESSION ID, USER SESSIONS, DEVICE SESSIONS, SUB SERVICE SESSIONS. (Label 1418 points to the top of the box)

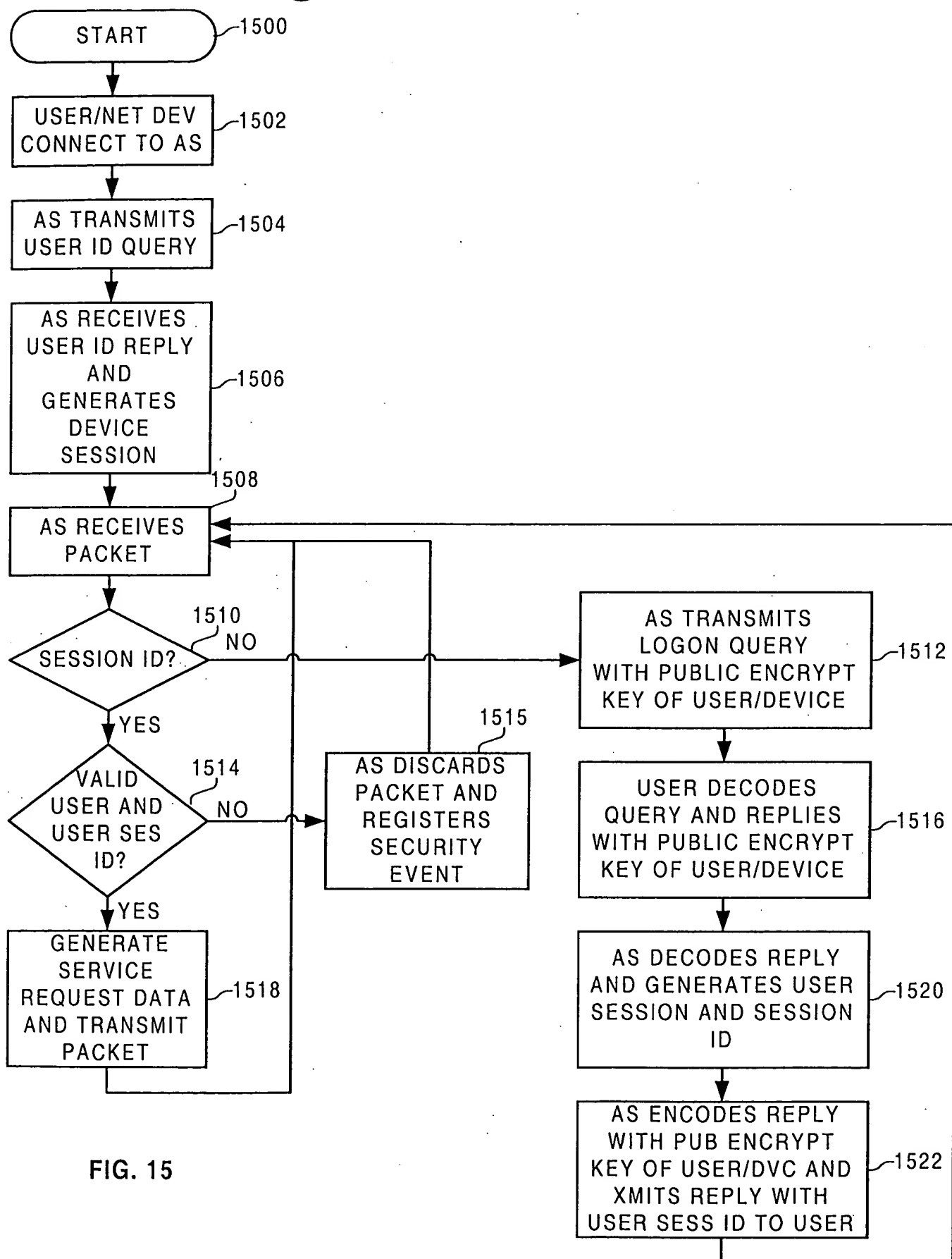
Arrows indicate relationships between specific fields across different entities:

- An arrow labeled **1422** points from the **DEV SESSION ID** field of **DEVICE 1** to the **DEV SESSIONS** field of **USER B**.
- An arrow labeled **1424** points from the **DEV SESSIONS** field of **USER B** to the **DEV SESSIONS** field of **SERVICE N**.
- An arrow labeled **1426** points from the **DEV SESSIONS** field of **SERVICE N** to the **DEV SESSIONS** field of **SERVICE A**.

Vertical ellipses (three dots) are placed between **DEVICE 2** and **DEVICE N**, between **USER B** and **USER N**, and between **SERVICE B** and **SERVICE N** to indicate multiple intermediate entities.

FIG. 14

002250 002250 002250



```

graph TD
    1600([START]) --> 1602[AS RECEIVES SERVICE REQUEST]
    1602 --> 1604{SERVICE SESSION ID?}
    1604 -- YES --> 1608{VALID USER AND USER SES ID?}
    1604 -- NO --> 1606[AS TRANSMITS LOGON QUERY WITH PUBLIC ENCRYPT KEY]
    1608 -- YES --> 1612[GENERATE SERVICE REQUEST DATA AND TRANSMIT PACKET]
    1608 -- NO --> 1606
    1612 --> 1602
    1606 --> 1610[USER DECODES QUERY AND REPLIES WITH PRIVATE KEY]
    1610 --> 1614[AS DECODES REPLY AND GENERATES SERVICE SESSION AND SESSION ID]
    1614 --> 1616[AS TRANSMITS REPLY WITH SERVICE SESSION ID TO USER]
    1616 --> 1602

```

FIG. 16

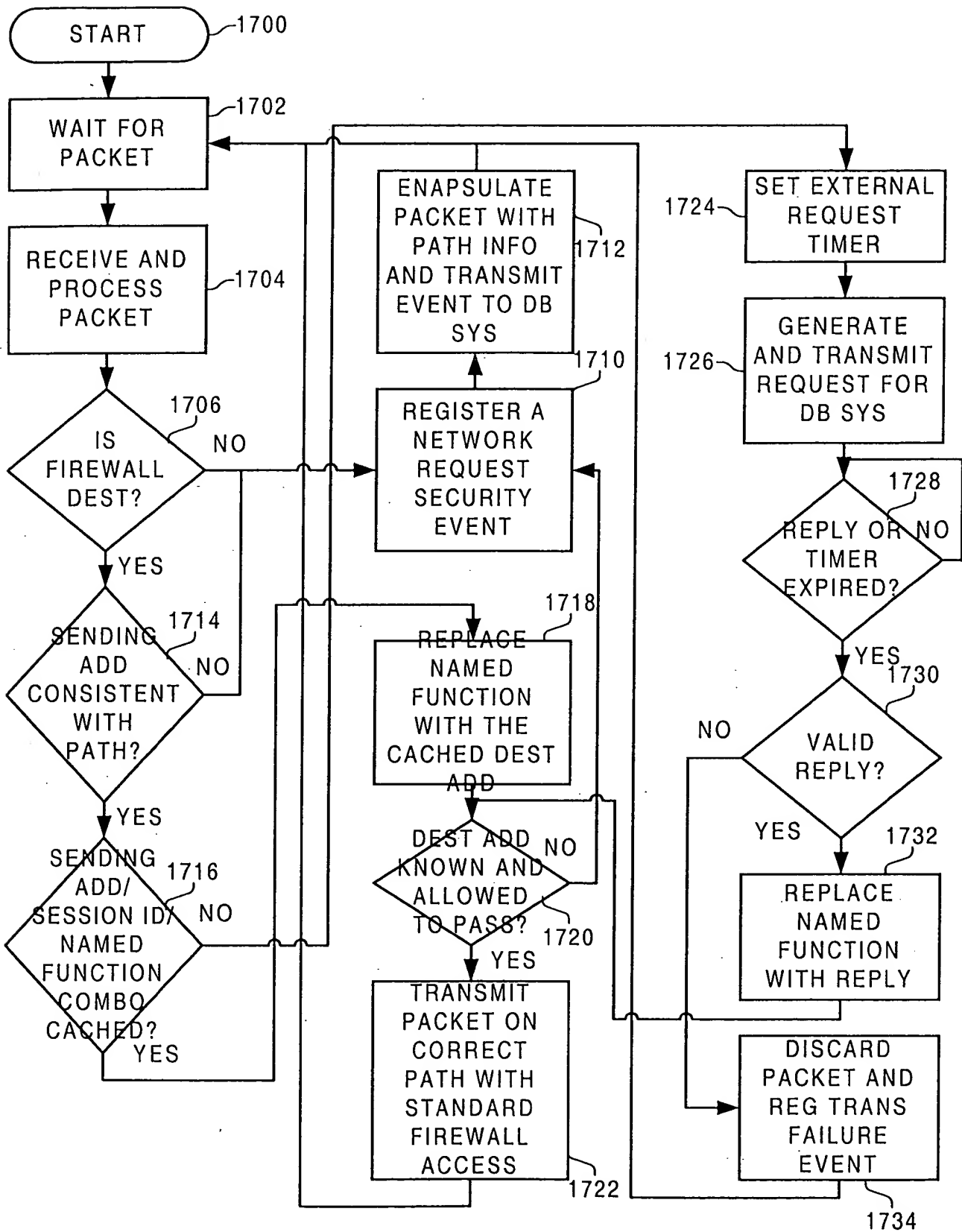


FIG. 17

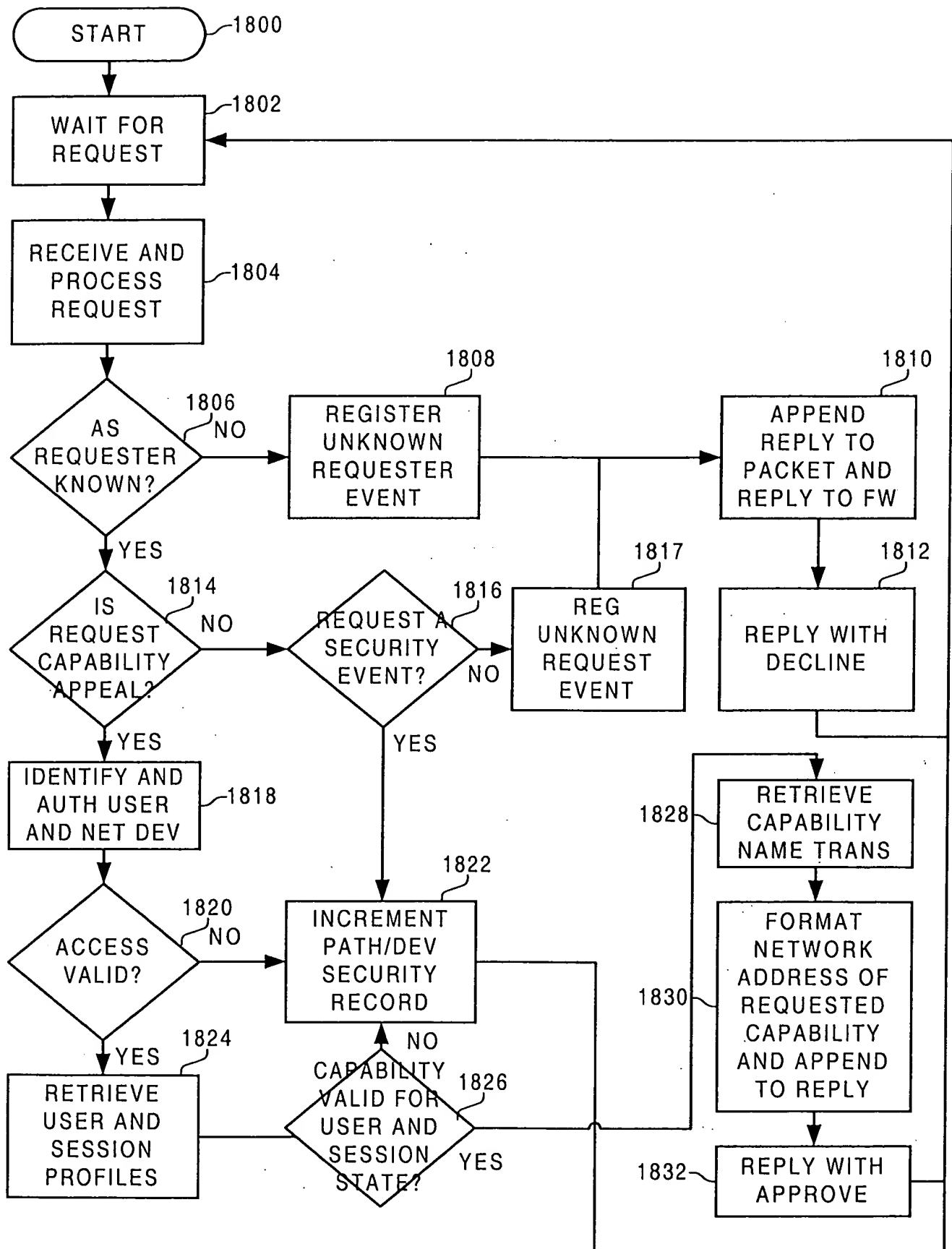


FIG. 18

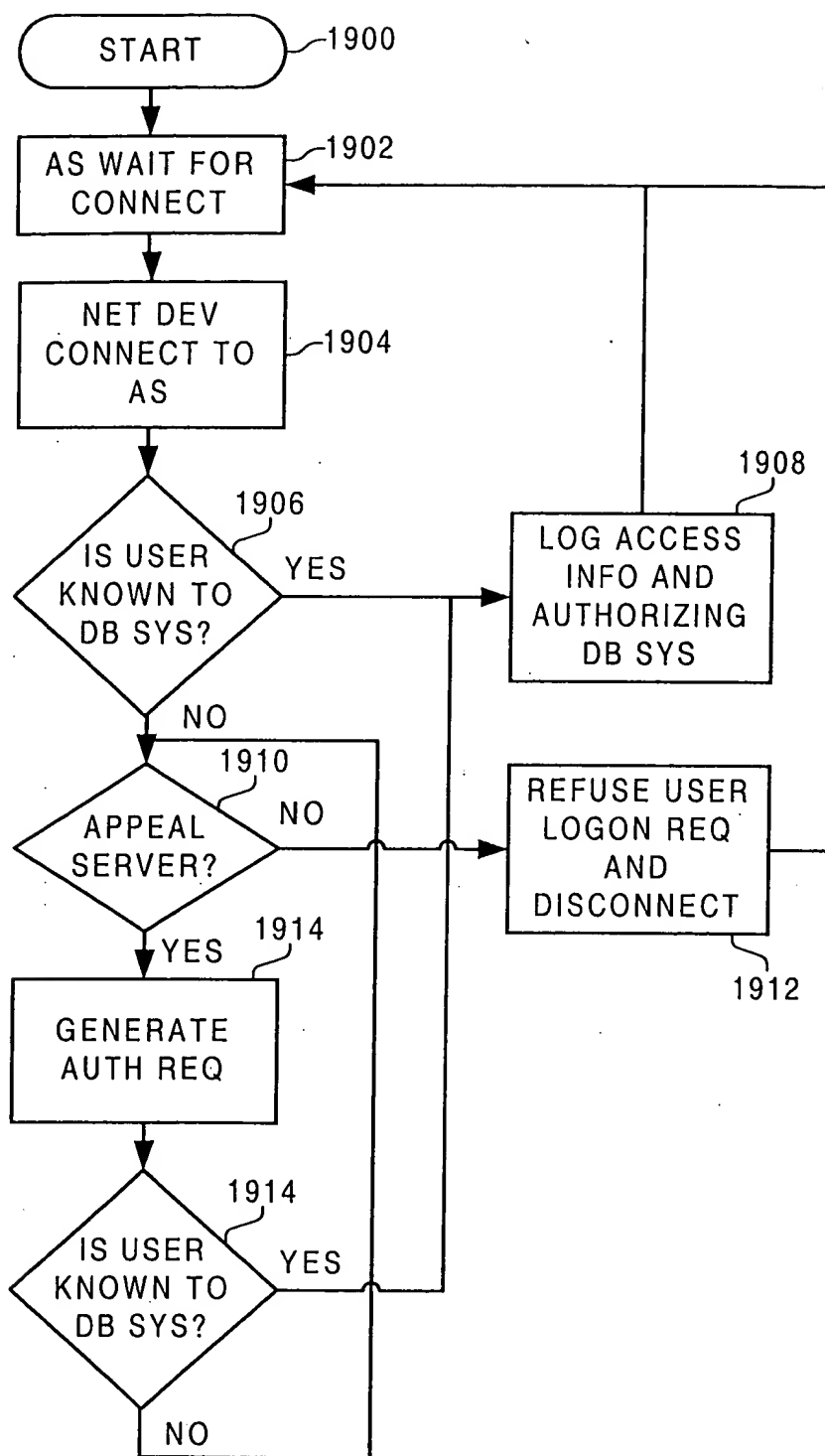


FIG. 19

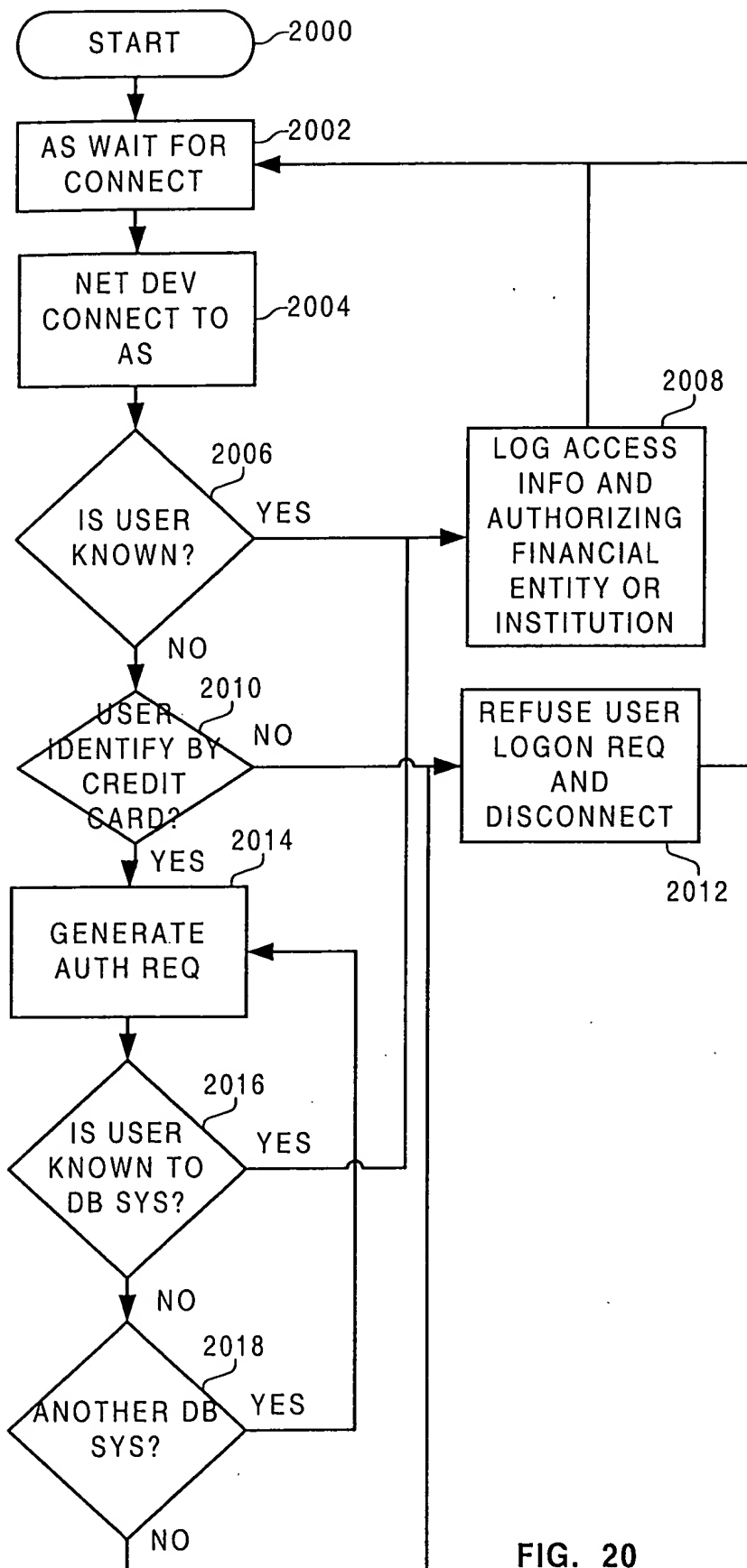


FIG. 20

```
graph TD; 2100([START]) --> 2102[AS WAIT FOR DISCONNECT]; 2102 --> 2104[NET DEV DISCONNECT FROM AS]; 2104 --> 2106{USER AUTH WITH PRE-AUTH?}; 2106 -- YES --> 2110[GENERATE PRE-AUTH COMPLETE TRANSACTION]; 2110 --> 2108[LOG ACCESS INFO AND AUTHORIZING DB SYS]; 2106 -- NO --> 2108; 2108 --> 2102;
```

FIG. 21

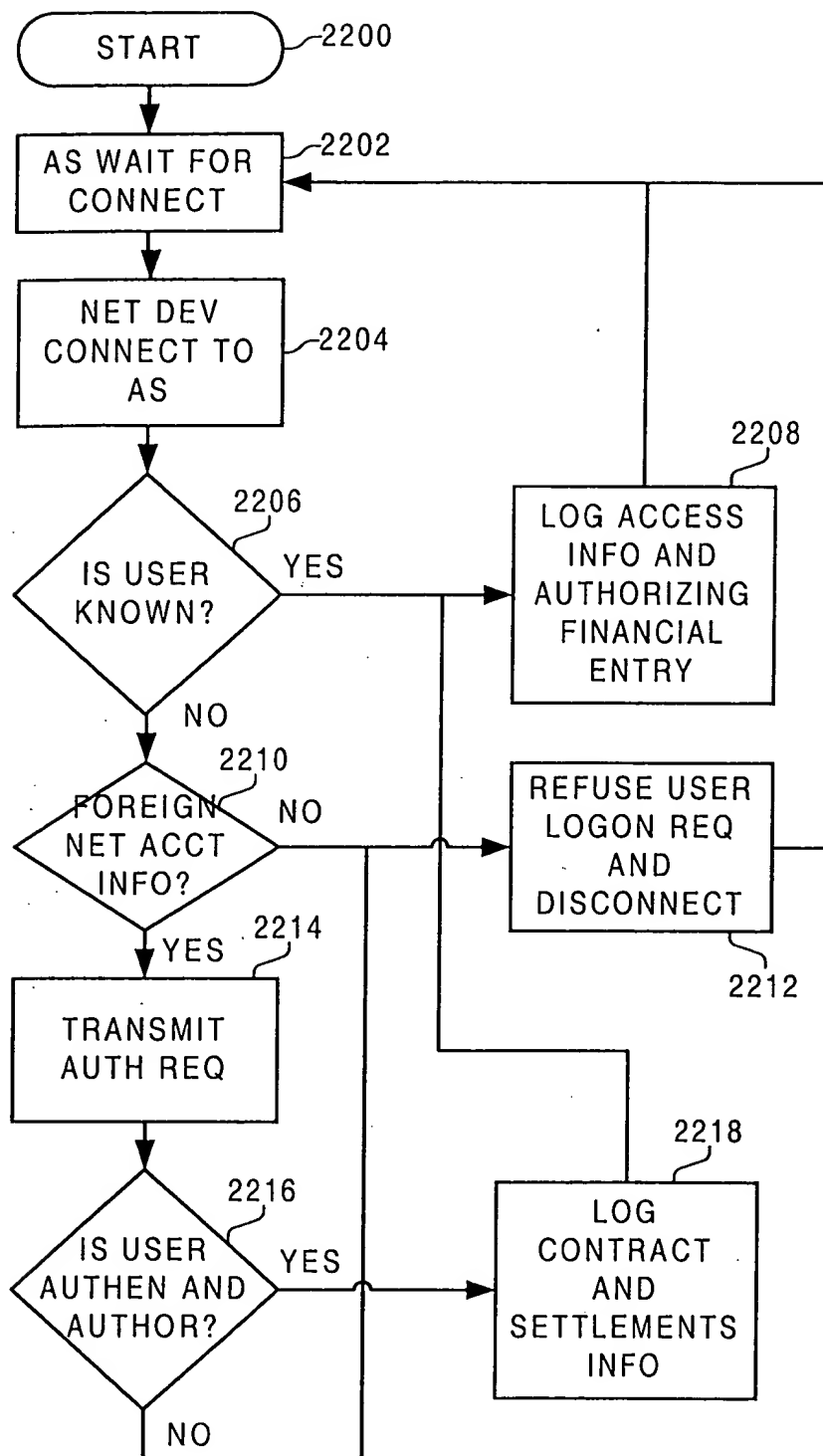


FIG. 22

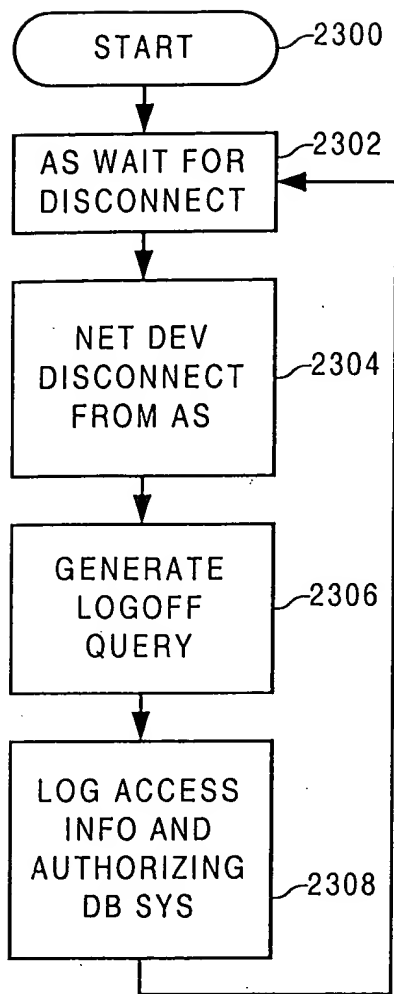


FIG. 23

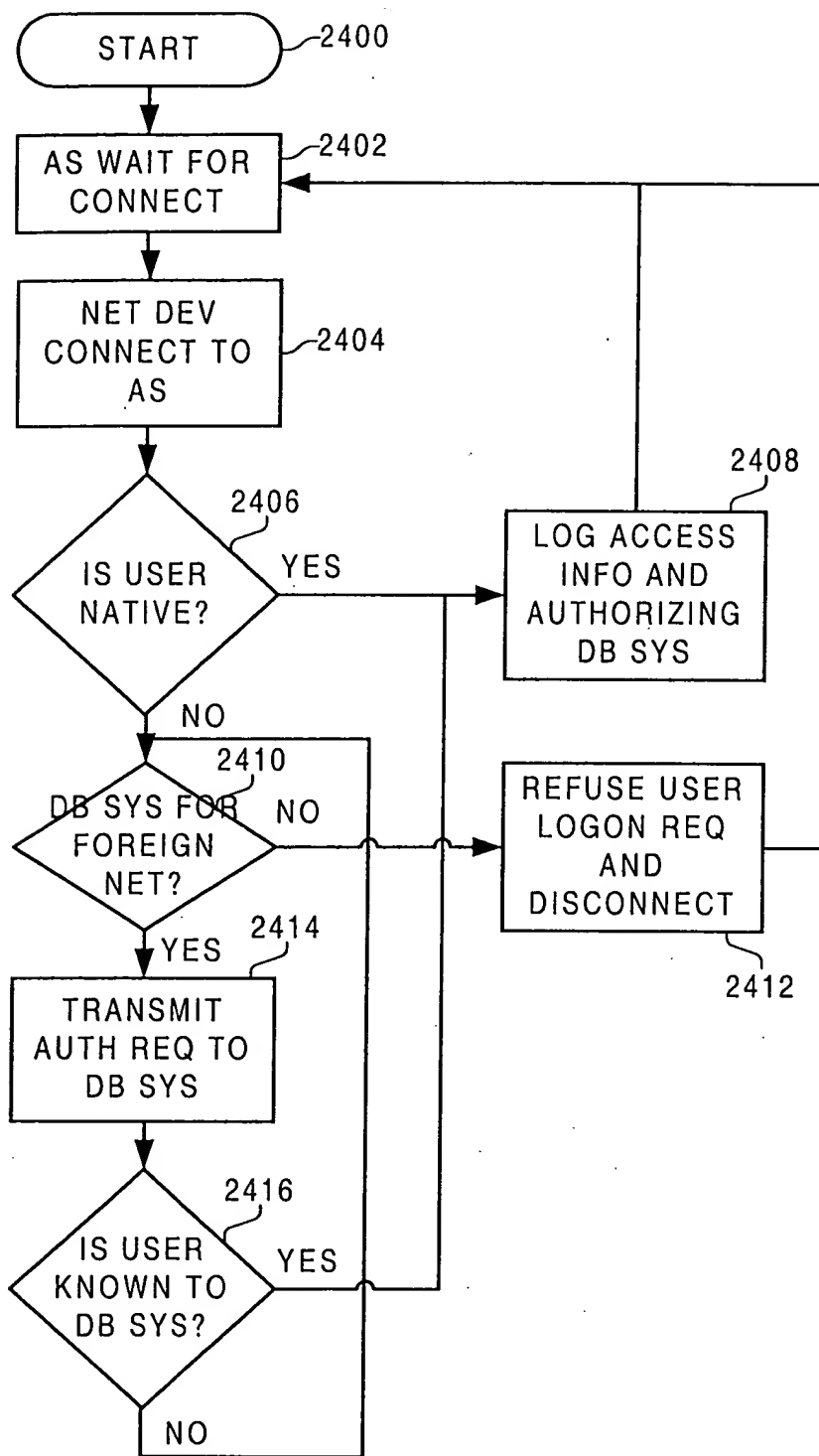


FIG. 24

```

graph TD
    2500([START]) --> 2502[WAIT FOR EVENT]
    2502 --> 2504[CONNECT TO AS  
2504]
    2502 --> 2524[DISCONNECT FROM AS  
2524]
    2502 --> 2528[SET USER PROXY REPLY  
TIMER]
    2502 --> 2532[UP TIMER EXPIRES  
2532]
    2504 --> 6006[COLLECT USER INFO  
6006]
    6006 --> 2508{USER ALLOWED ACCESS?  
2508}
    2508 -- NO --> 2510[DISCONNECT USER  
2510]
    2508 -- YES --> 2512{PROXY AVAIL?  
2512}
    2512 -- NO --> 2514[START PROXY  
2514]
    2512 -- YES --> 2516{USER PROFILE INFO AVAIL?  
2516}
    2516 -- NO --> 2518[GENERATE USER PROFILE ERROR  
2518]
    2516 -- YES --> 2520[CONFIGURE UP AGENT  
2520]
    2520 --> 2522[GENERATE MESSAGE WITH PROXY  
ADD AND PUBLIC ENC KEY  
2522]
    2522 --> 2534[REPLY TO UP WITH CONT WAIT  
MESSAGE  
2534]
    2528 --> 6030[UP WRITE STATUS TO AS  
6030]
    6030 --> 2526[GENERATE RESET COMMAND  
2526]
    2526 --> 2510
    2532 --> 2534
    2510 --> 2502
    2518 --> 2502
    2534 --> 2502

```

FIG. 25

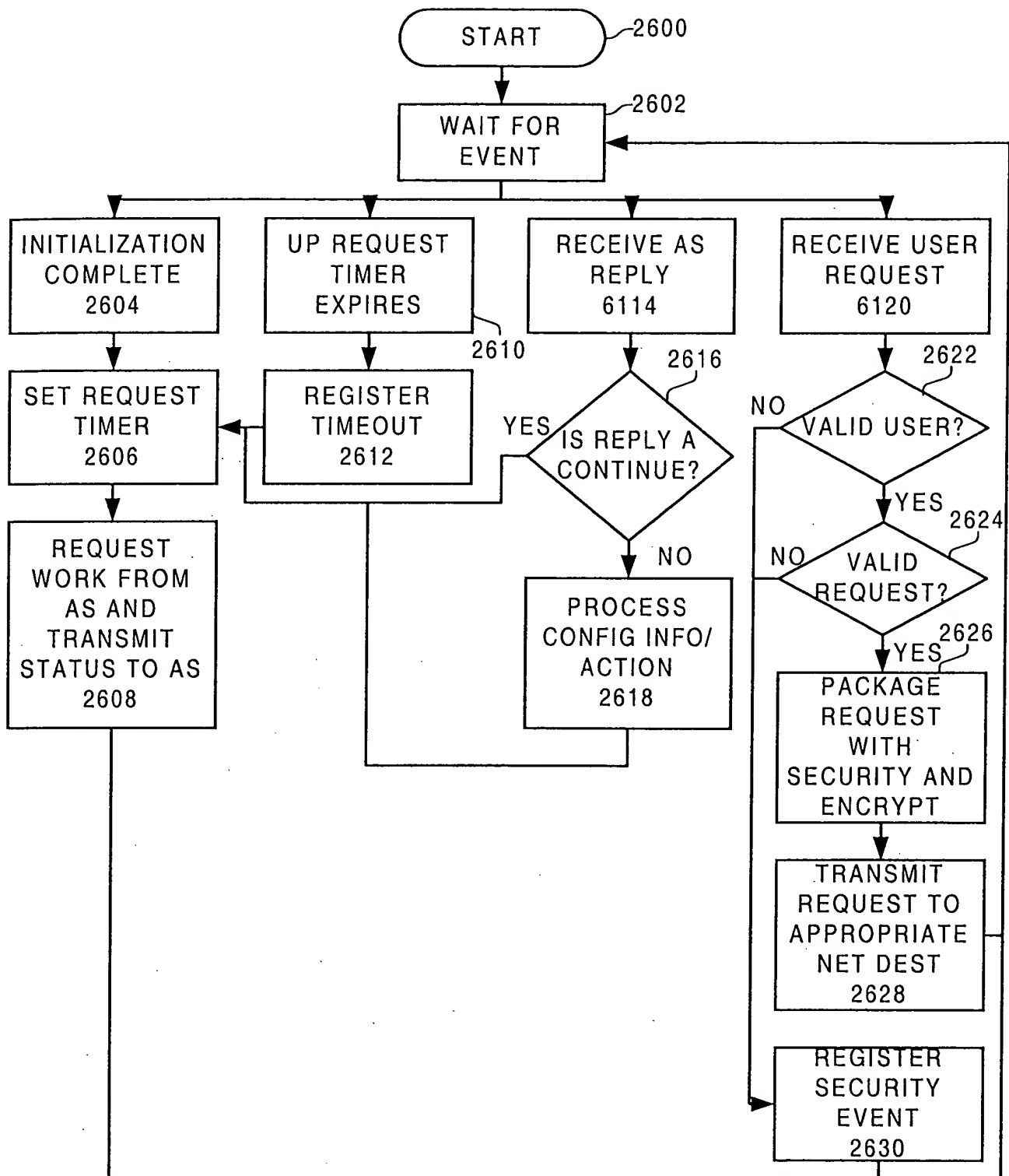


FIG. 26

09576300.052000

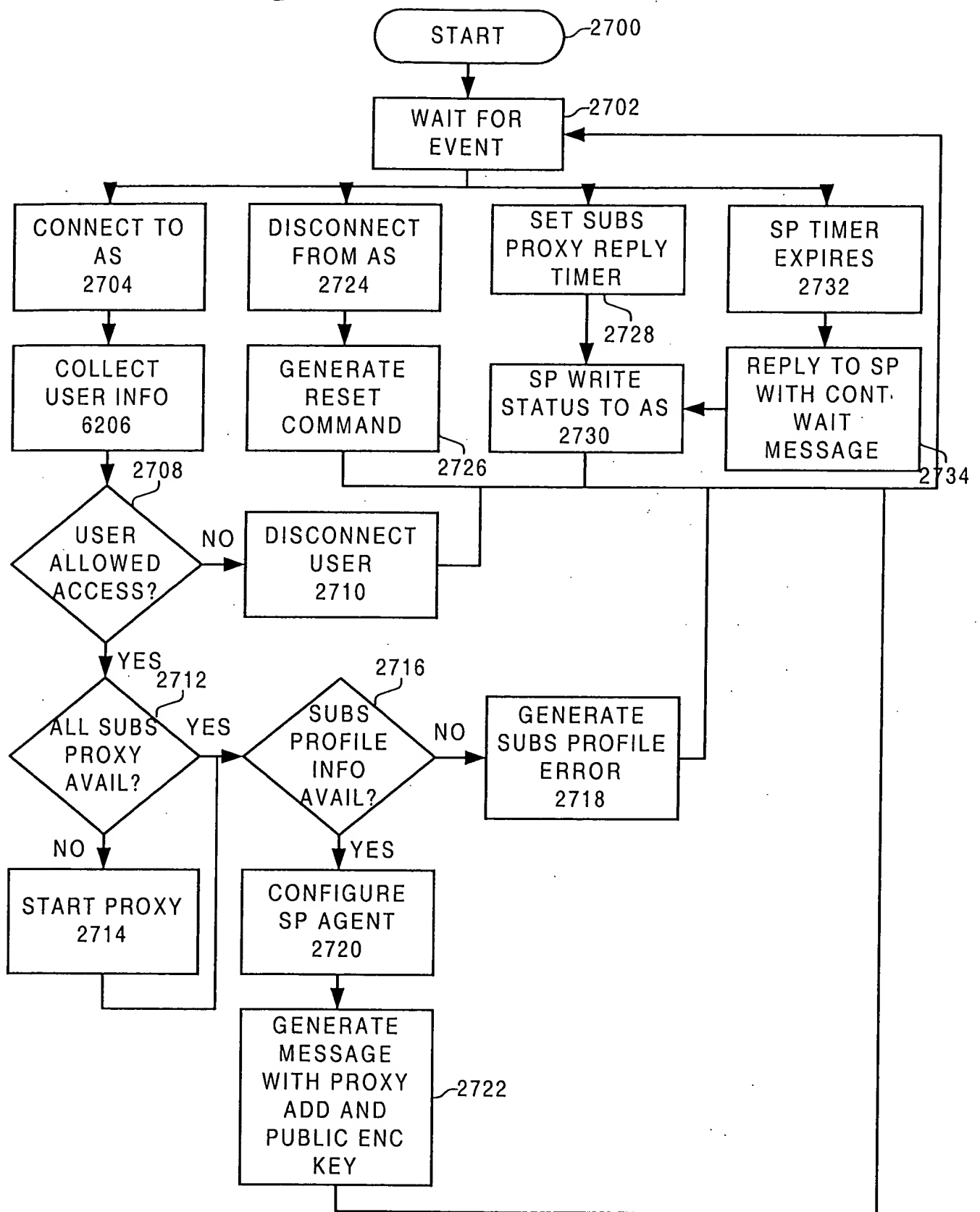


FIG. 27

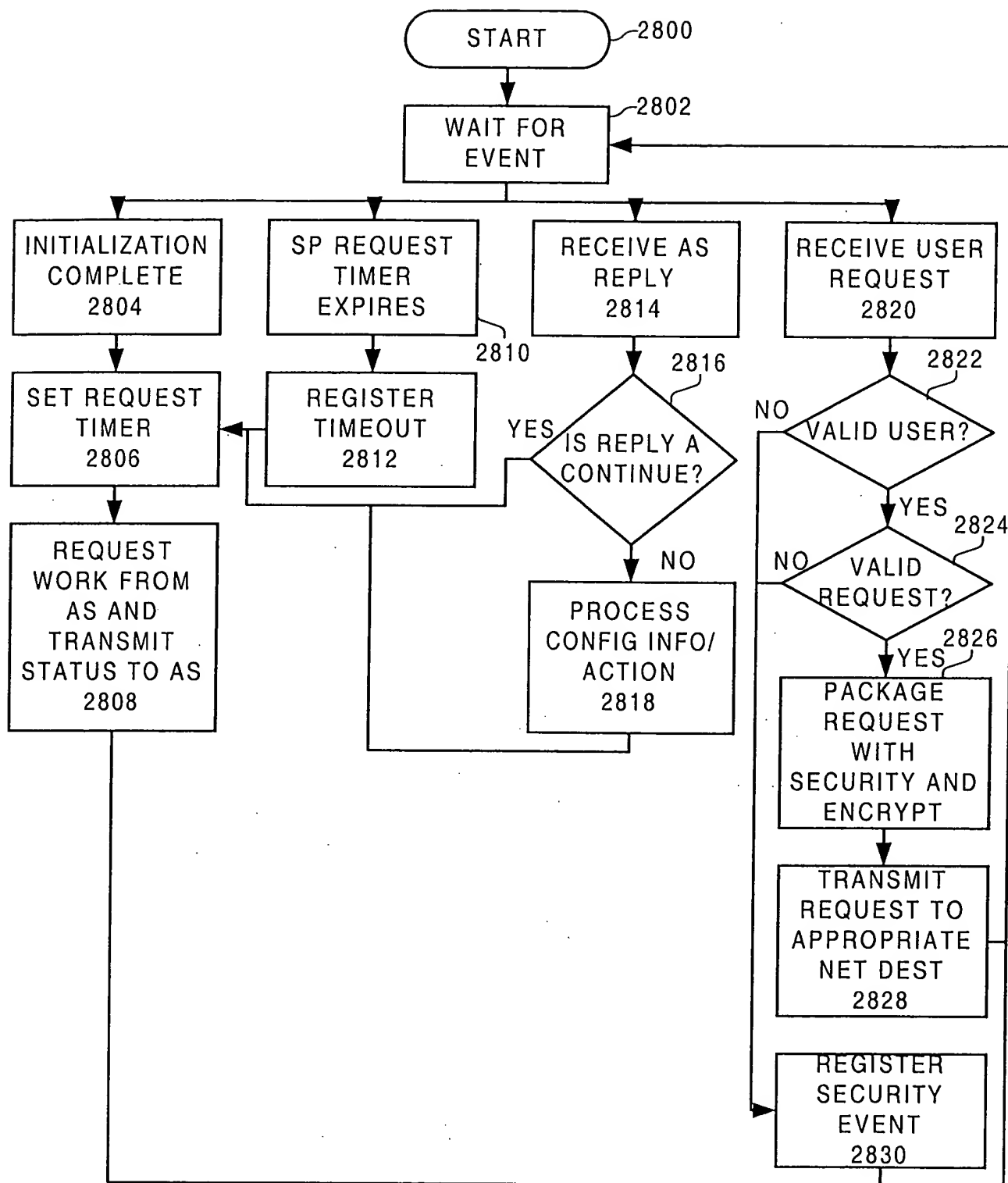


FIG. 28

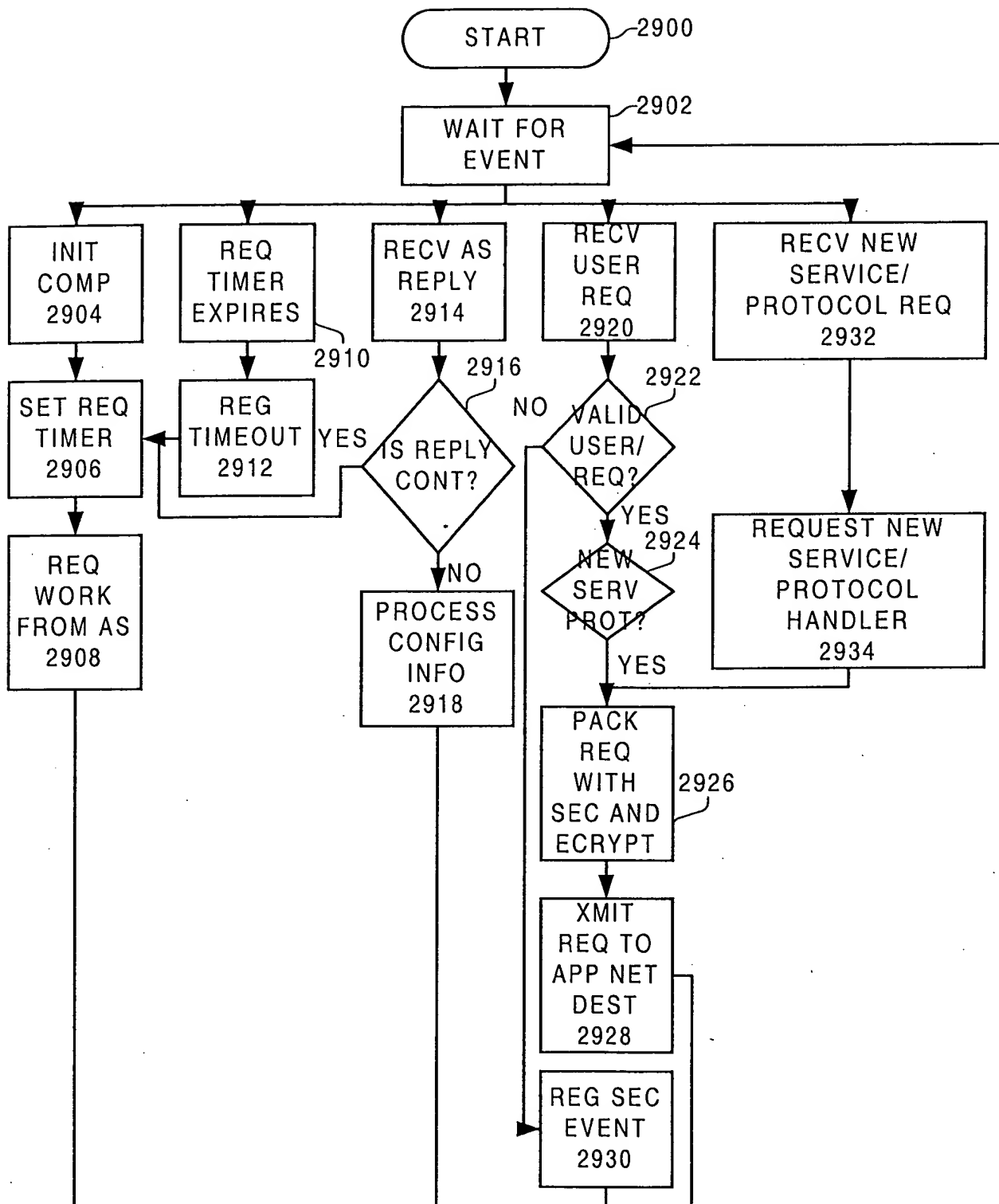


FIG. 29

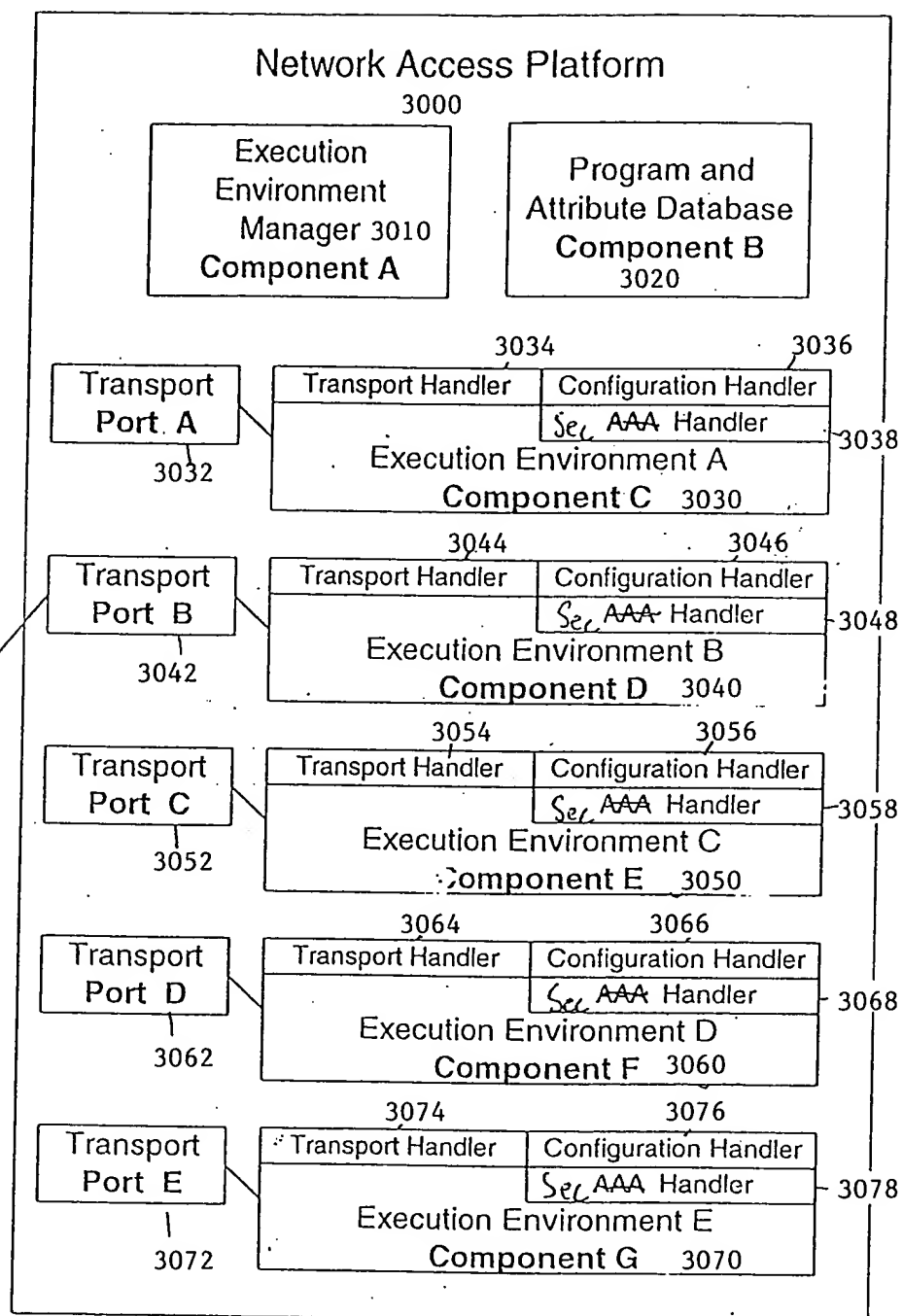


FIGURE 30

```

graph TD
    3100([START]) --> 3102[SEC HANDLER WAIT FOR CONNECT MESSAGE]
    3102 --> 3106[SEC HANDLER RECEIVE CONNECT MESSAGE]
    3106 --> 3104[SEC HANDLER GENERATE LOGON REQUEST]
    3104 --> 3108{REPLY FOR LOGON REQUEST?}
    3108 -- YES --> 3110{REPLY TIMEOUT?}
    3108 -- NO --> 3110
    3110 -- YES --> 3112[SEC HANDLER GENERATE DISCONNECT MESSAGE]
    3110 -- NO --> 3102
    3112 --> 3102
    3114[SEC HANDLER RECEIVE REPLY FOR LOGON REQUEST] --> 3116[SEC HANDLER TRANSMIT LOGON INFO TO SECURITY SERVER]
    3116 --> 3118{REPLY FROM SECURITY SERVER?}
    3118 -- YES --> 3120{REPLY TIMEOUT?}
    3118 -- NO --> 3120
    3120 -- YES --> 3122{THIRD TRY?}
    3120 -- NO --> 3122
    3122 -- YES --> 3112
    3122 -- NO --> 3124{ACCEPT REPLY?}
    3124 -- YES --> 3126[SEC HANDLER TRANSMIT ACCEPT MSG CONFIG PARMS]
    3124 -- NO --> 3134[TRANSPORT HANDLER TRANSMIT DISCONNECT MSG TO CONFIG HANDLER]
    3126 --> 3128[CONFIG HANDLER LOAD AND EXECUTE PROGRAMS]
    3128 --> 3130[EXECUTION ENVIRONMENT PERFORM PROGRAMS FOR USER]
    3130 --> 3132{DISCONNECT MSG?}
    3132 -- YES --> 3112
    3132 -- NO --> 3128
    3134 --> 3136[CONFIG HANDLER CLOSE TRANSPORT PORT AND RESET TRANSPORT HANDLER]
    3136 --> 3138[CONFIG HANDLER TRANSMIT SHUTDOWN MSG TO EXECUTION ENVIRONMENT MANAGER]
    3138 --> 3140([END])
  
```

FIG. 31

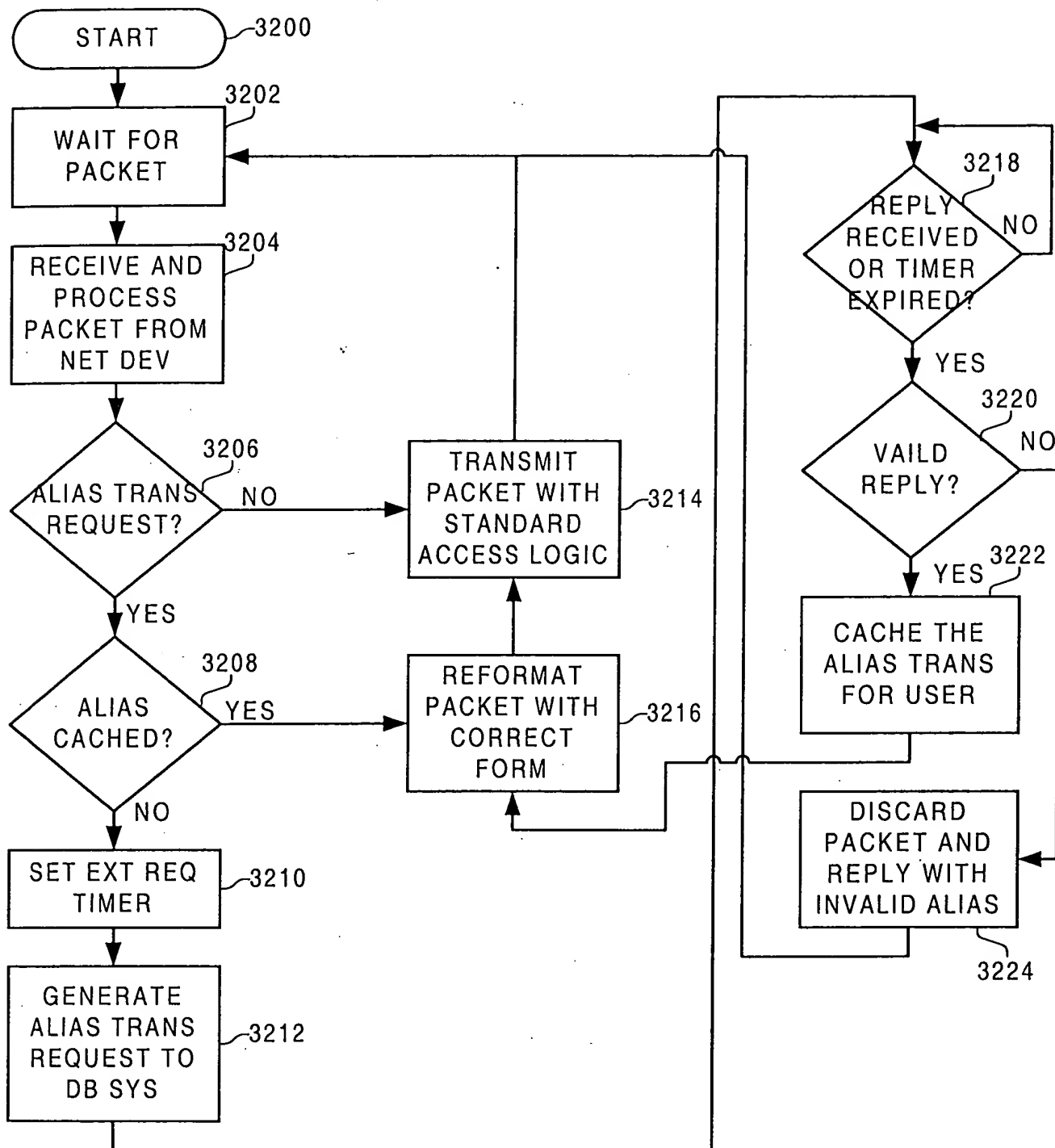


FIG. 32

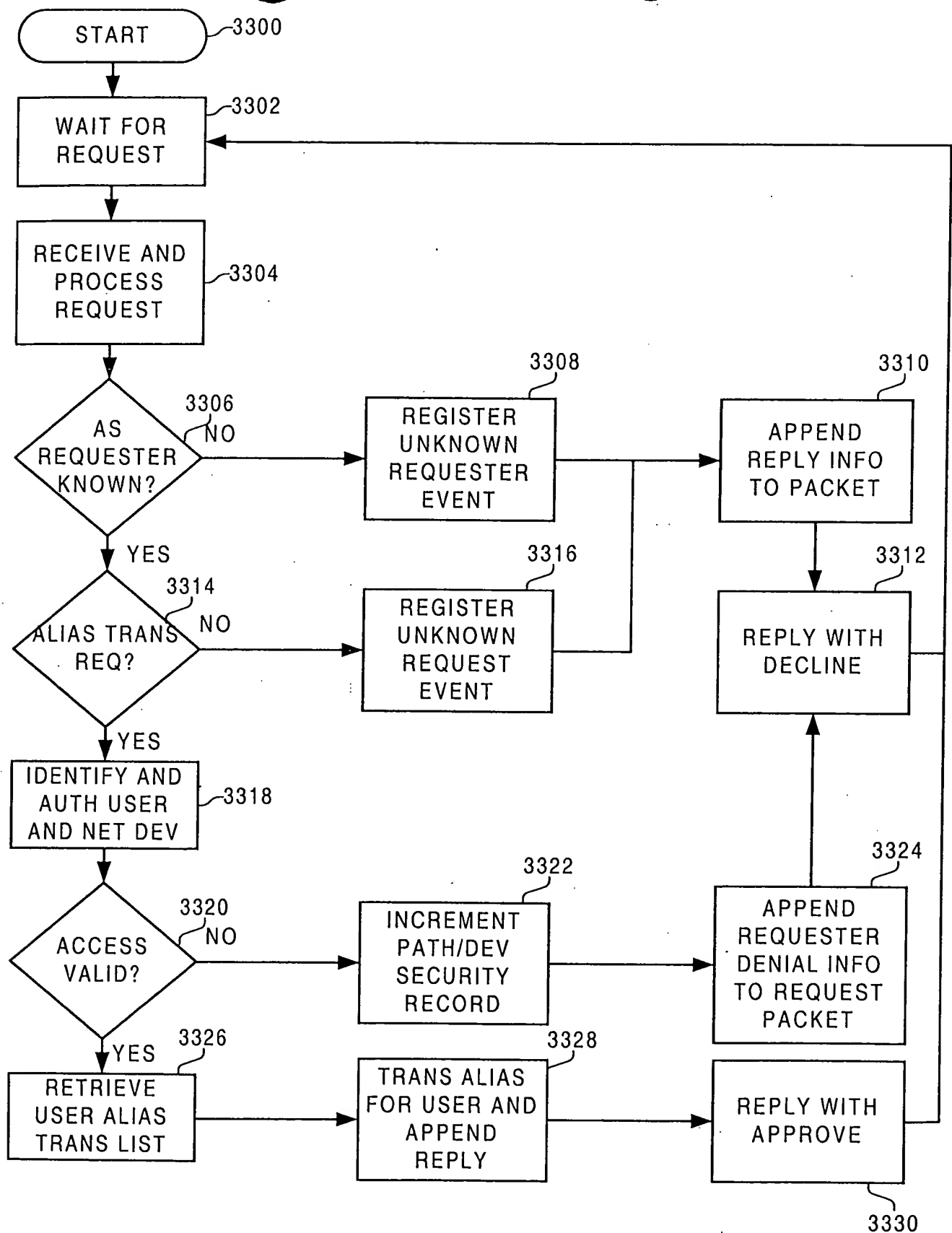


FIG. 33


```

graph TD
    3500([START]) --> 3502[WAIT FOR PACKET]
    3502 --> 3504[RECEIVE AND PROCESS PACKET FROM NET DEV]
    3504 --> 3506{IS PROTOCOL, SENDING ADD, AND DEST ADD KNOWN AND ALLOWED TO PASS?}
    3506 -- YES --> 3508{IS SENDING ADD CONSISTENT WITH THE PATH?}
    3506 -- NO --> 3526[DISCARD PACKET]
    3508 -- YES --> 3514[TRANSMIT PACKET ON CORRECT PATH WITH STANDARD FW ACCESS]
    3508 -- NO --> 3510[REGISTER PATH SECURITY EVENT]
    3510 --> 3512[ENCAPSULATE PACKET WITH PATH INFO AND TRANSMIT EVENT TO DB SYS]
    3512 --> 3502
    3512 --> 3515{FILTER APPEAL?}
    3515 -- YES --> 3516[IDENTIFY AND AUTH USER AND NET DEV]
    3515 -- NO --> 3526
    3516 --> 3518{ACCESS VALID?}
    3518 -- YES --> 3520[RETRIEVE USER AND NET DEV PROFILE]
    3518 -- NO --> 3510
    3520 --> 3522[GENERATE ACCESS LOGIC FOR FILTER MOD]
    3522 --> 3524[MODIFY PROTOCOL AND ADD FILTERS BASED ON REPLY]
    3524 --> 3502

```

FIG. 35

FIG. 36

```

graph TD
    3700([START]) --> 3702[WAIT FOR REQUEST]
    3702 --> 3704[RECEIVE AND PROCESS REQUEST]
    3704 --> 3706{AS REQUESTER KNOWN?}
    3706 -- NO --> 3708[REGISTER UNKNOWN REQUESTER EVENT]
    3708 --> 3710[APPEND REPLY TO PACKET]
    3706 -- YES --> 3714{IS REQUEST FILTER APPEAL?}
    3714 -- NO --> 3716{REQUEST A SECURITY EVENT?}
    3714 -- YES --> 3720[IDENTIFY AND AUTH USER AND NET DEV]
    3720 --> 3722{ACCESS VALID?}
    3722 -- NO --> 3718[INCREMENT PATH/DEV SECURITY RECORD]
    3722 -- YES --> 3724[RETRIEVE USER AND NET DEV PROFILES]
    3718 --> 3719{REQUEST A SECURITY EVENT?}
    3719 -- YES --> 3728[REPLY WITH APPROVE]
    3719 -- NO --> 3717[REGISTER UNKNOWN ACTION EVENT]
    3717 --> 3712[REPLY WITH DECLINE]
    3716 -- YES --> 3718
    3716 -- NO --> 3717
    3710 --> 3712
    3712 --> 3702
    3724 --> 3726[FORMAT ACCESS LOGIC AND APPEND TO REPLY]
    3726 --> 3728

```

FIG. 37

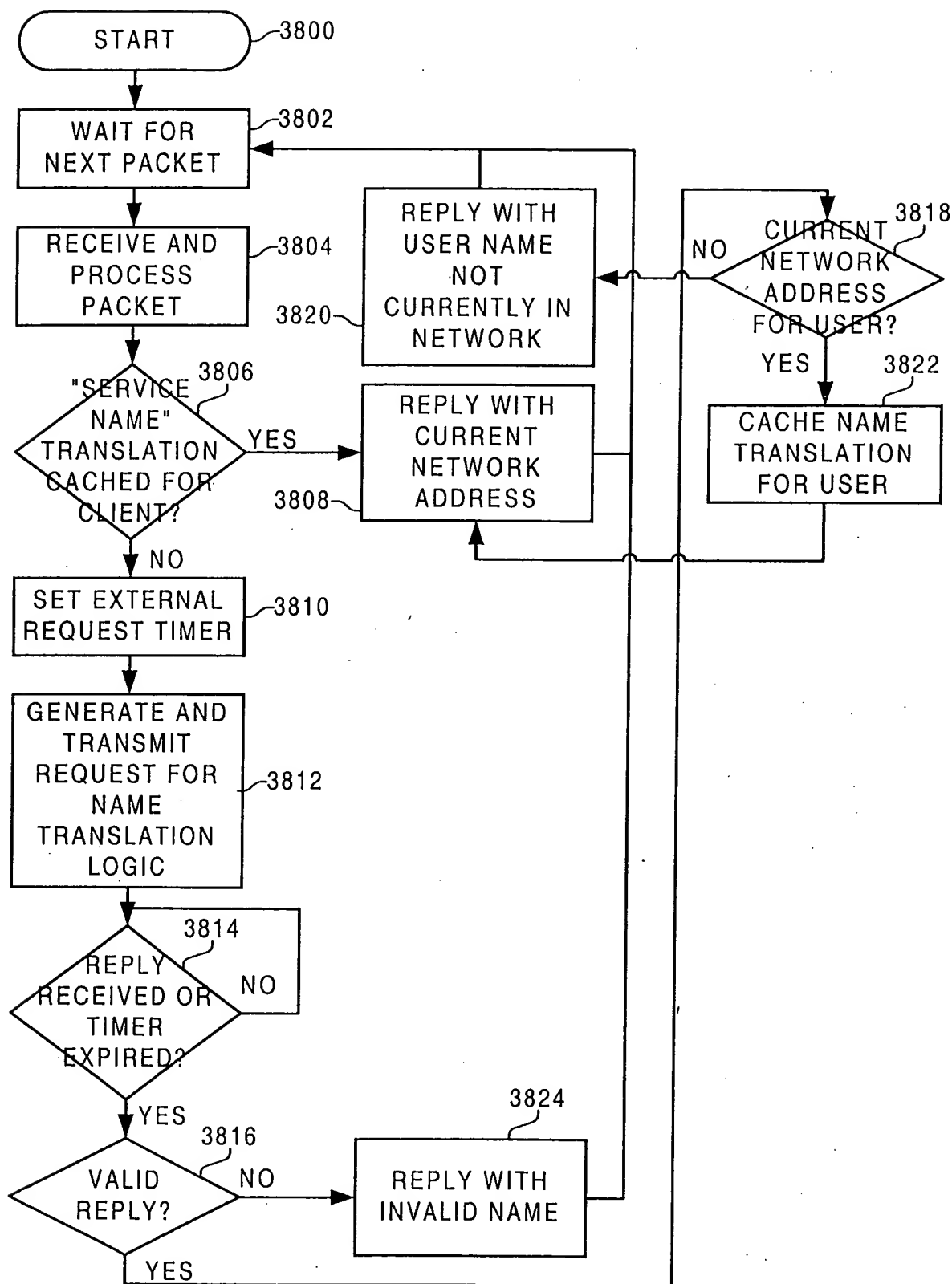


FIG. 38

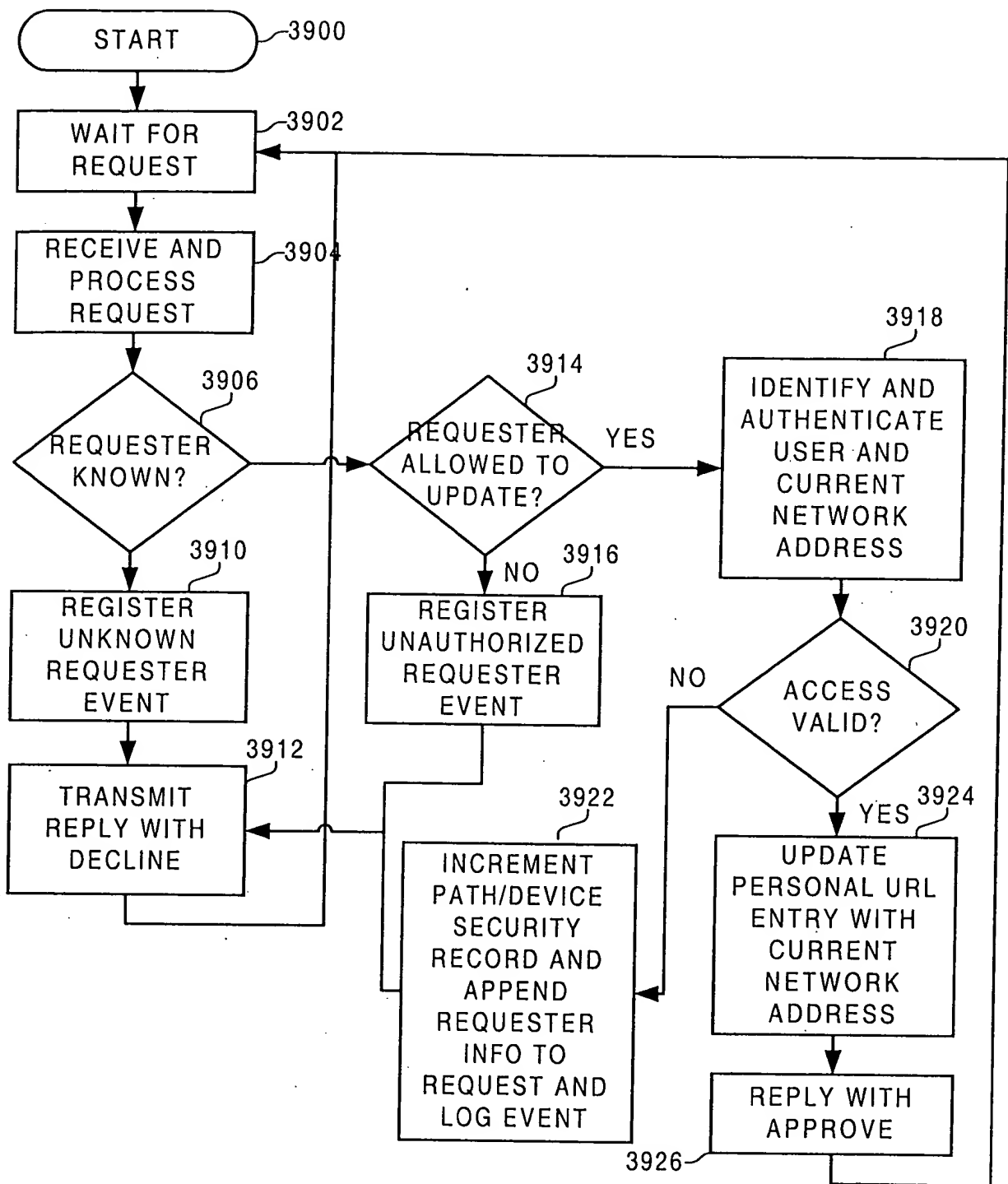


FIG. 39

09575200 00000000

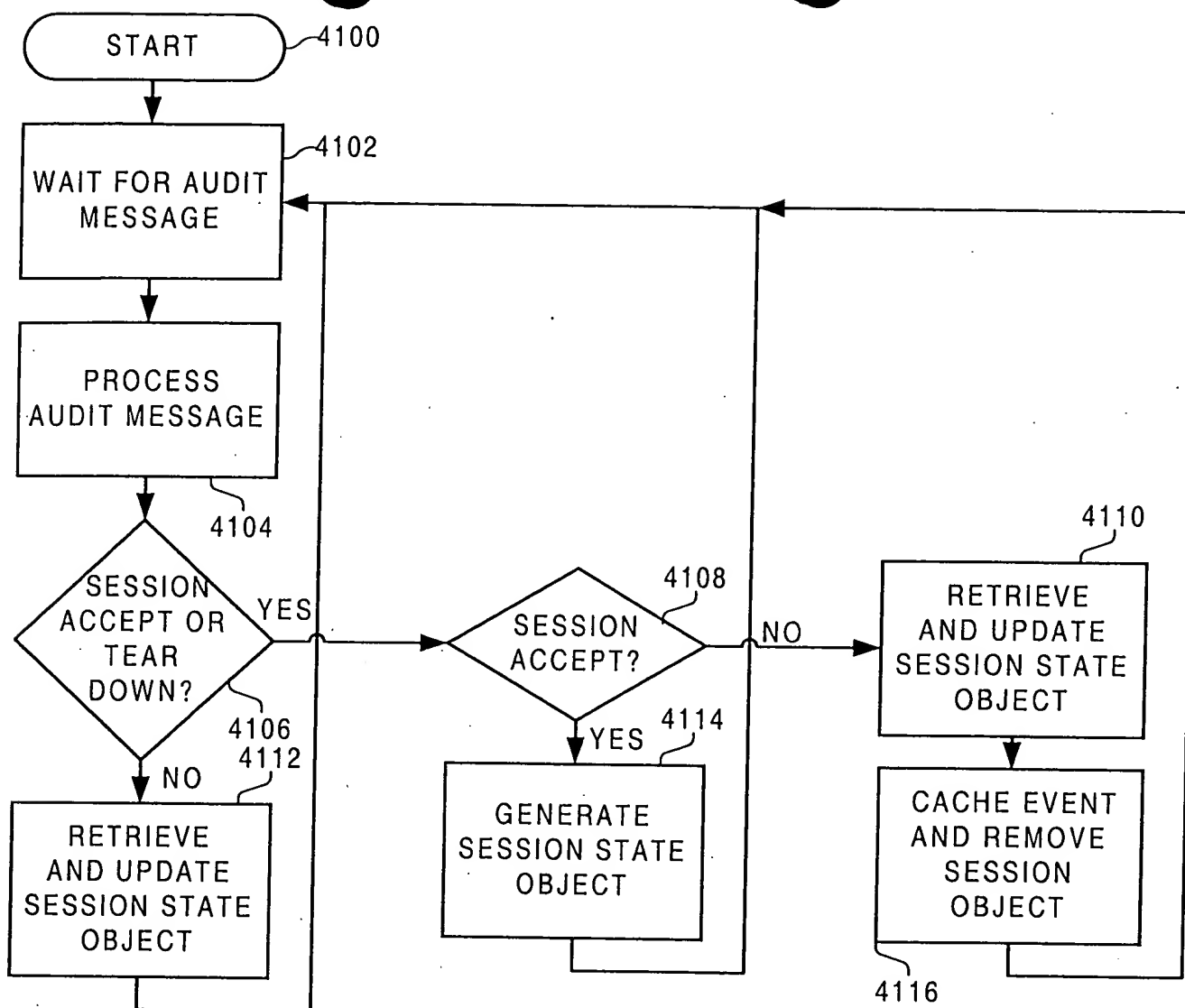


FIG. 41

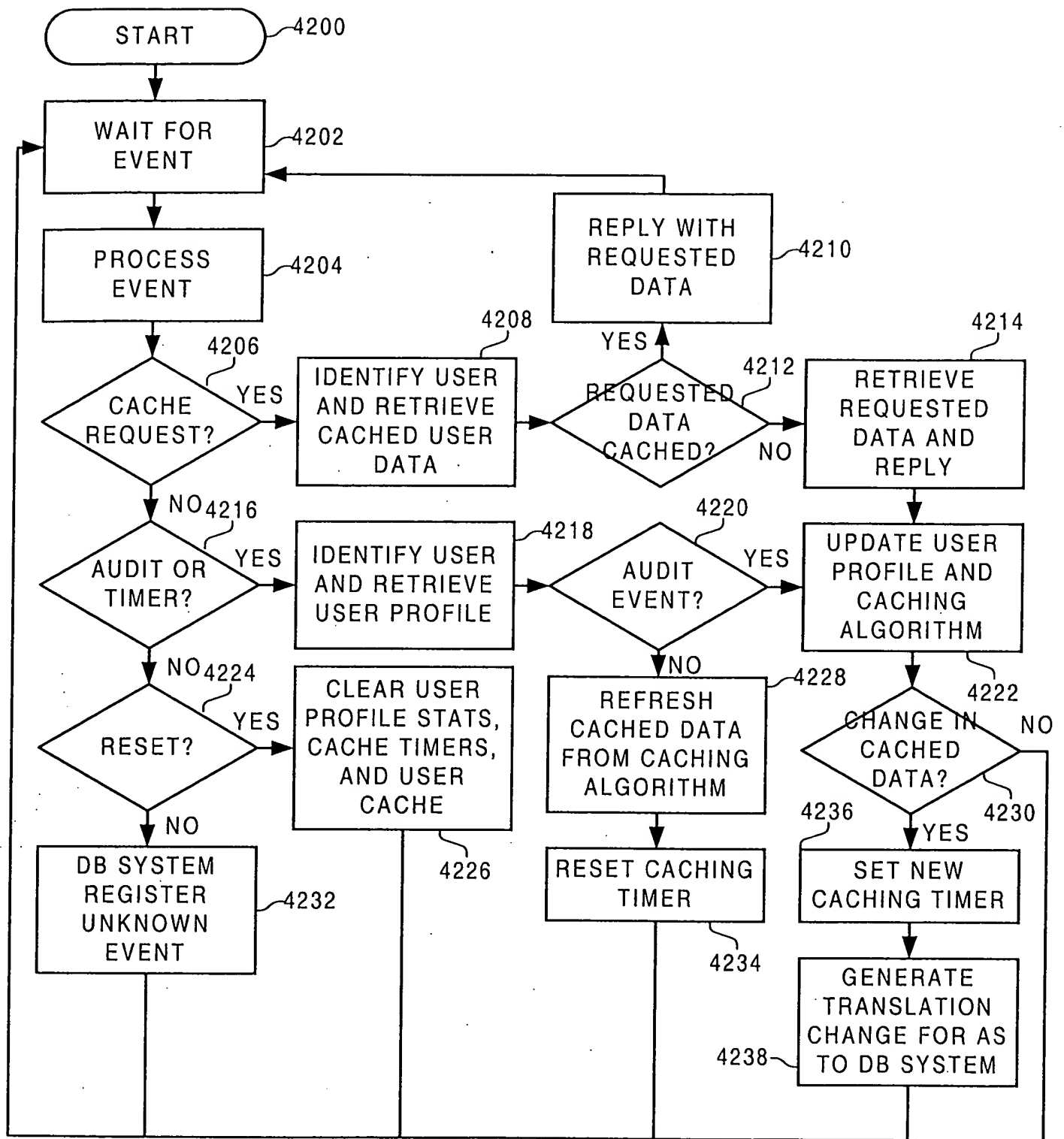


FIG. 42

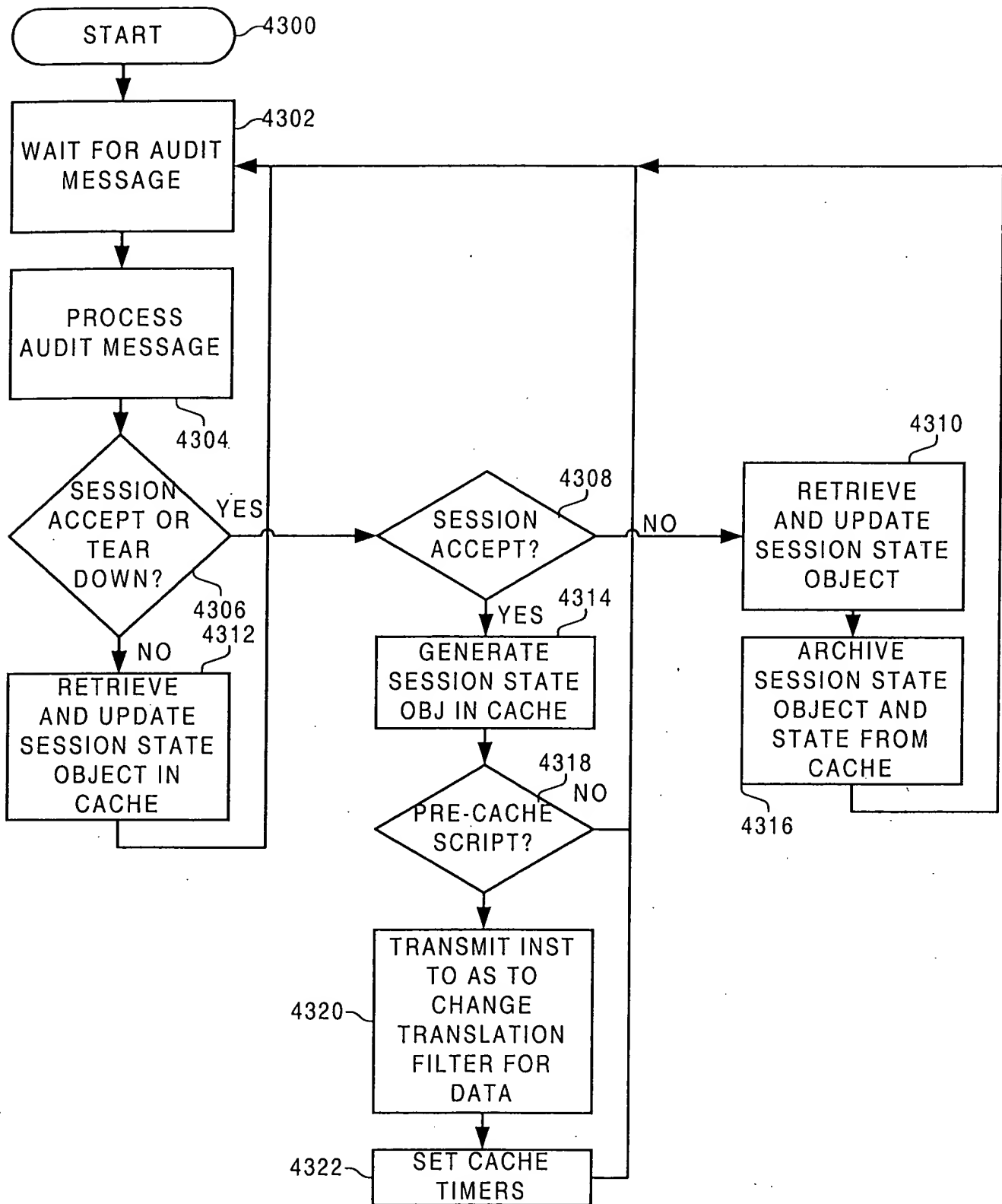


FIG. 43

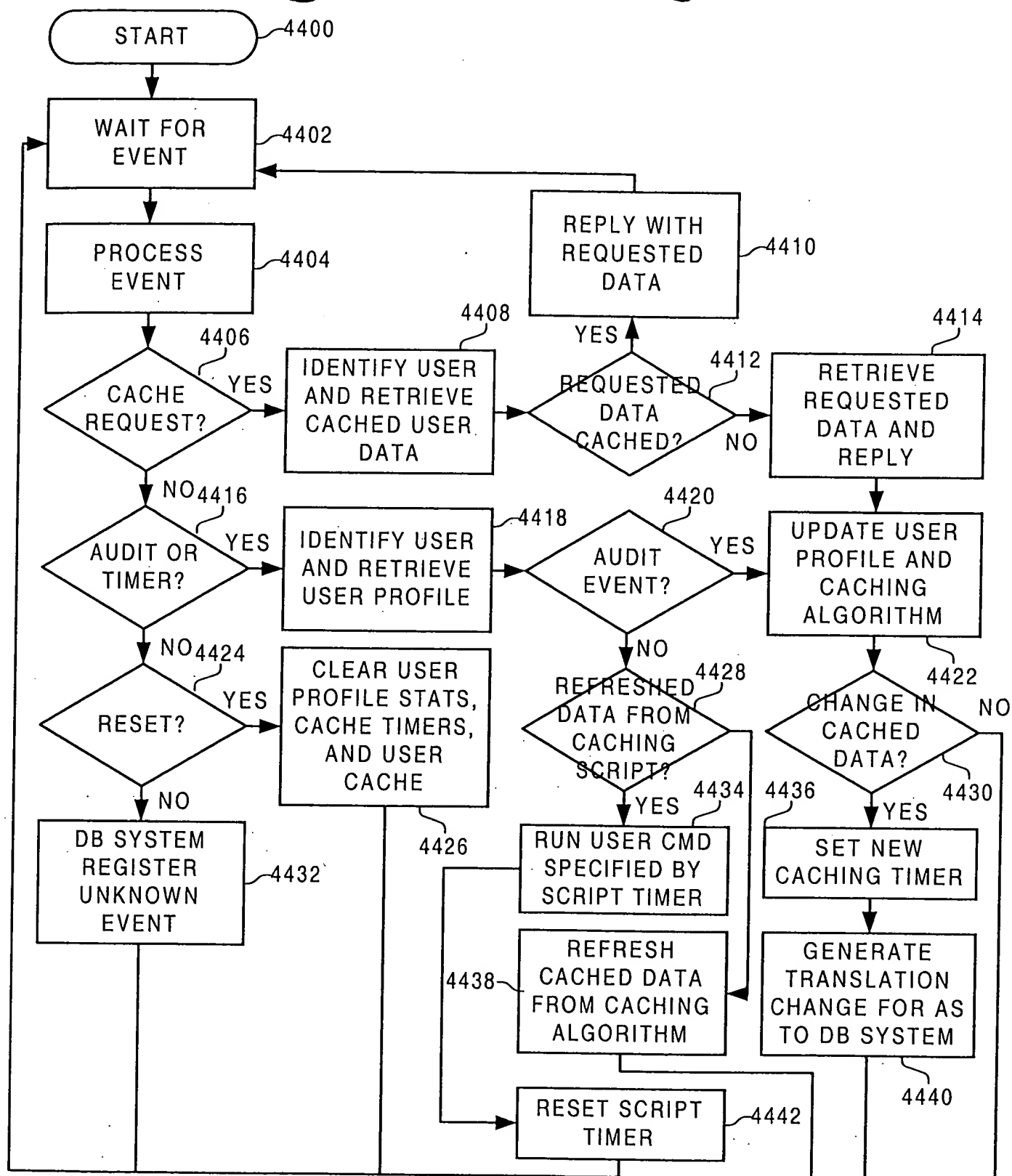


FIG. 44

```

graph TD
    4500([START]) --> 4502[USER REQUEST SERVICE APP]
    4502 --> 4504[SERVICE APP QUERY USER FOR QOS]
    4504 --> 4506{PREMIUM QOS SELECTED?}
    4506 -- NO --> 4516[EXCHANGE WITH STANDARD ACCESS]
    4516 --> 4514[RETURN CONTROL TO USER]
    4514 --> 4502
    4506 -- YES --> 4508[SERVICE APP TRANSMIT AUTHEN AND AUTHOR INST TO DB SYS]
    4508 --> 4510[DB SYS TRANSMIT INST TO CONNECT USING PREMIERE SRVC NET]
    4510 --> 4512[EXCHANGE PACKETS USING QOS]
    4512 --> 4518[DB SYS RECEIVE DISCONNET INST]
    4518 --> 4520[DB SYS TRANSMITS USAGE AND PERFORM RECORDS FOR SERVICE APP]
    4520 --> 4514
  
```

FIG. 45

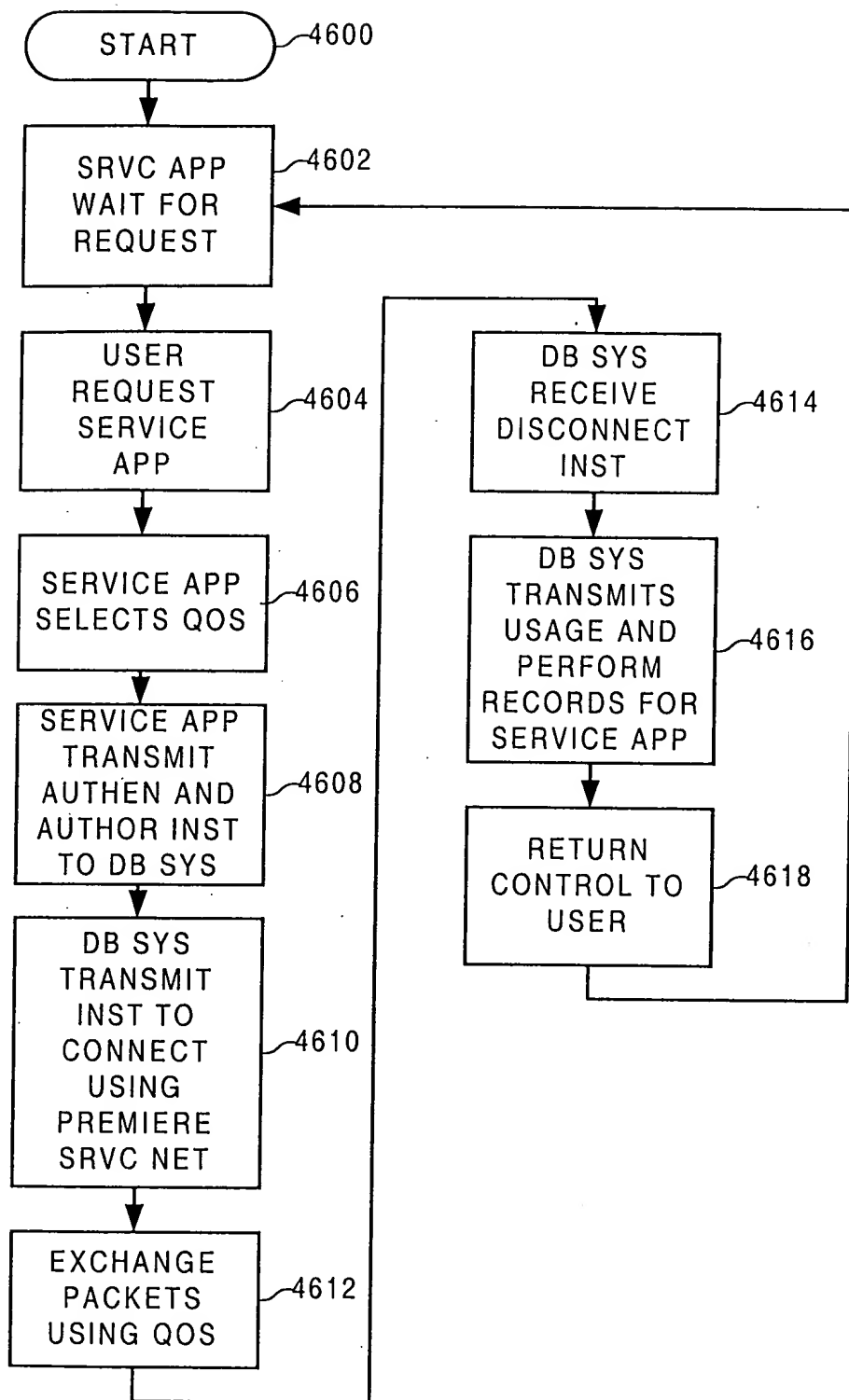


FIG. 46

```

graph TD
    4700([START]) --> 4702[AS WAIT FOR PACKET]
    4702 --> 4704[AS RECEIVE AND PROCESS PACKET FROM NET DEV]
    4704 --> 4706{ENCODED FOR ACC CONTROL?}
    4706 -- NO --> 4714[AS PROCESS PACKET USING STANDARD ACCESS LOGIC]
    4714 --> 4702
    4706 -- YES --> 4708[AS IDENTIFY PHYSICAL ACCESS PATH CHAR]
    4708 --> 4710{ACC CONTROL ALLOWED?}
    4710 -- NO --> 4716[AS REGISTER AND LOG ILLEGAL ACCESS EVENT]
    4716 --> 4718[AS DISCARD PACKET]
    4718 --> 4702
    4710 -- YES --> 4712[AS TRANSMIT ACC CONTROL REQUEST TO DB SYS]
    4712 --> 4720[DB SYS IDENTIFY AND AUTH USER AND REQUESTING AS USING PACKET AND PATH]
    4720 --> 4722[DB SYS RETRIEVE USER PROFILE AND DEV PROFILE]
    4722 --> 4724{ACC CONTROL ALLOWED?}
    4724 -- YES --> 4726[DB SYS GENERATE AND TRANSMIT ACCESS INSTRUCTION]
    4726 --> 4727[LOG ACCESS CHANGE]
    4727 --> 4728[DB SYS TRANSMITS REPLY WITH NEW ACCESS STATUS]
    4728 --> 4702
    4724 -- NO --> 4716

```

FIG. 47

```

graph TD
    4800([START]) --> 4802[WAIT FOR NEXT PACKET]
    4802 --> 4804[RECEIVE AND PROCESS PACKET]
    4804 --> 4806{DEST ADDRESS ENABLED FOR FAILOVER?}
    4806 -- YES --> 4808{ADDRESS TRANSLATION ACTIVE FOR DEST?}
    4806 -- NO --> 4812[TRANSMIT PACKET WITH STANDARD ACCESS LOGIC]
    4808 -- YES --> 4810[REPLACE PACKET DEST ADDRESS WITH CACHED SEC ADDRESS]
    4808 -- NO --> 4812
    4810 --> 4812
    4812 --> 4802

```

FIG. 48

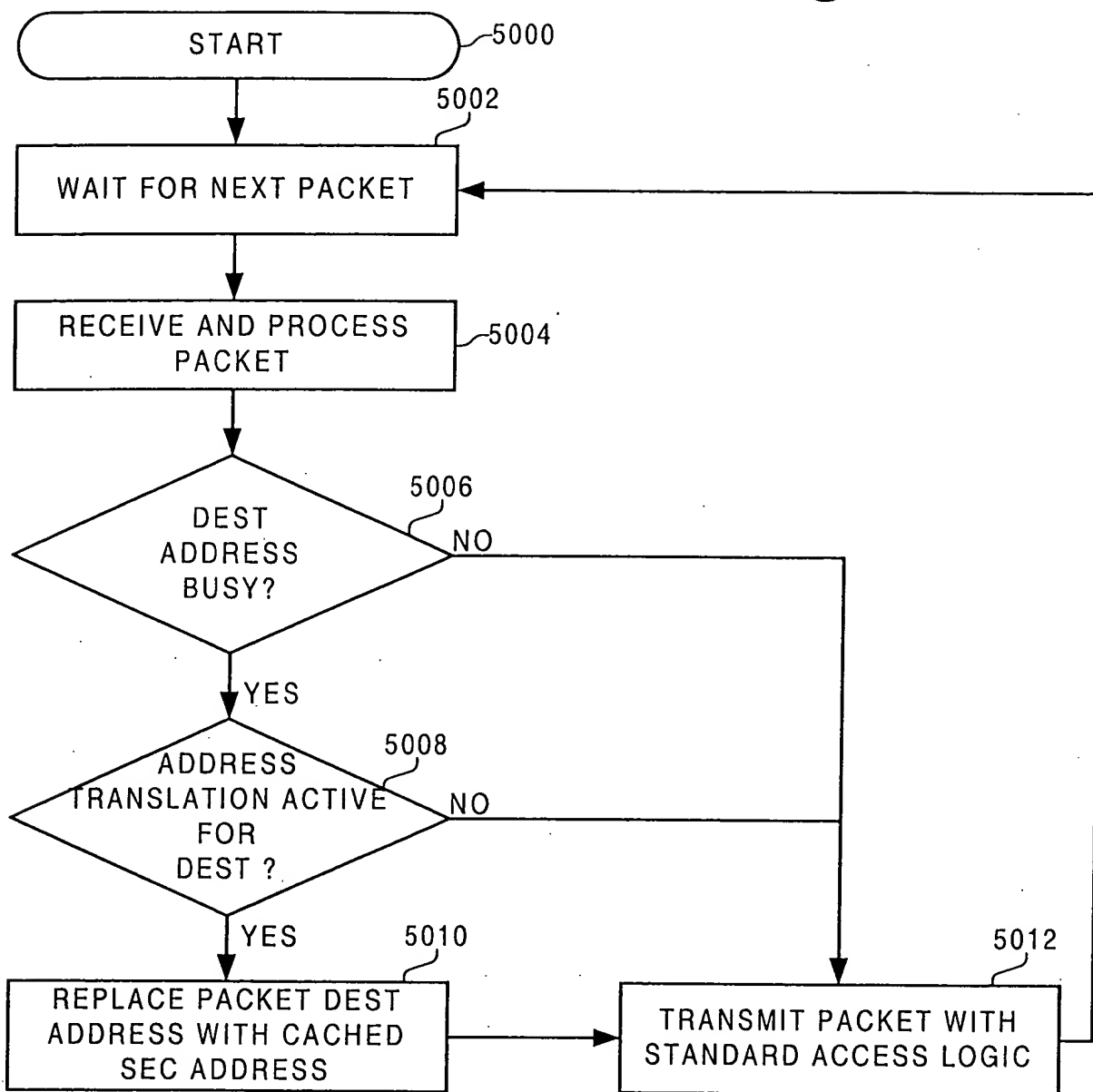


FIG. 50

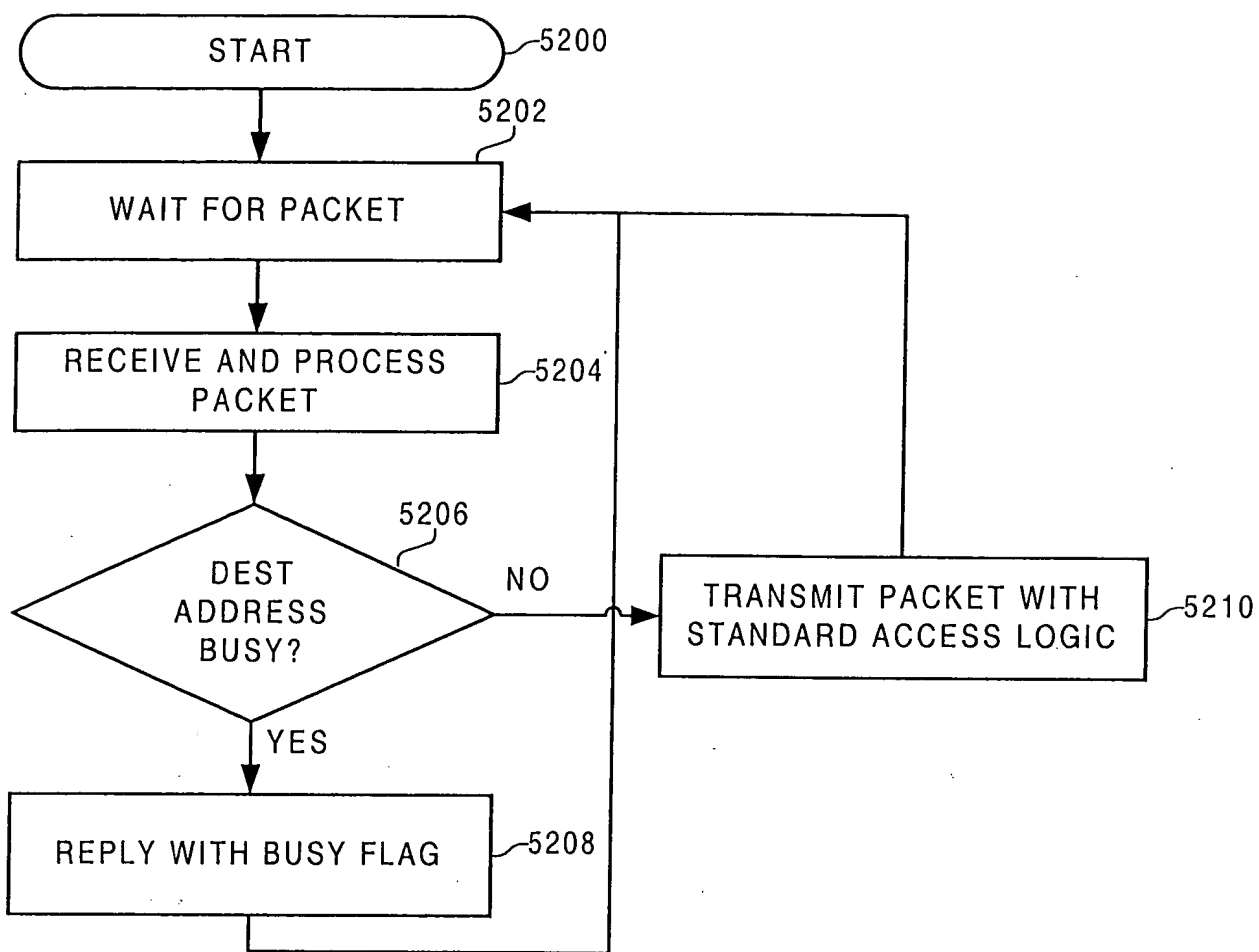


FIG. 52

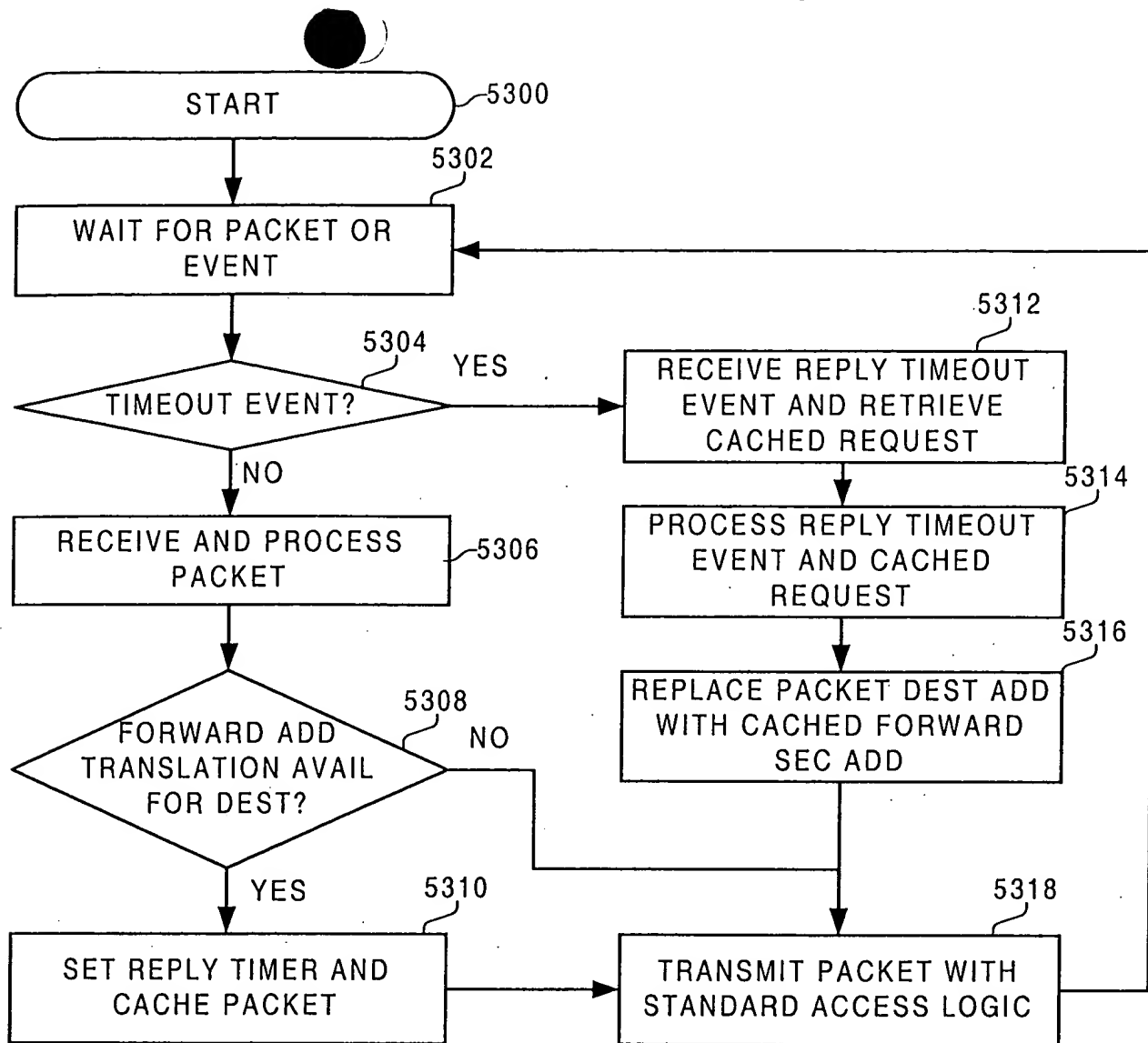


FIG. 53

```

graph TD
    5400([START]) --> 5402[WAIT FOR REQUEST]
    5402 --> 5404[RECEIVE AND PROCESS REQUEST FROM NET DEV]
    5404 --> 5406{CURRENT TRANS FOR ALIAS?}
    5406 -- YES --> 5410[REPLY TO NET DEV]
    5406 -- NO --> 5412{KNOWN PROFILE EXIST FOR USER?}
    5412 -- YES --> 5410
    5412 -- NO --> 5414[GENERATE ALIAS RESOLUTION FAILURE MESSAGE]
    5414 --> 5402
    5410 --> 5408[TRANSLATE ALIAS TO NET ADD VALUE]
    5408 --> 5410
    5410 --> 5416[SET EXT REQ TIMER]
    5416 --> 5418[GENERATE REQUEST FOR DB SYS]
    5418 --> 5420{REPLY RECEIVED OR TIMER EXPIRED?}
    5420 -- YES --> 5422{VALID REPLY?}
    5420 -- NO --> 5416
    5422 -- YES --> 5424[CACHE ALIAS TRANS FOR USER WITH TIME TO LIVE PARAMETERS]
    5422 -- NO --> 5414
    5424 --> 5402

```

FIG. 54

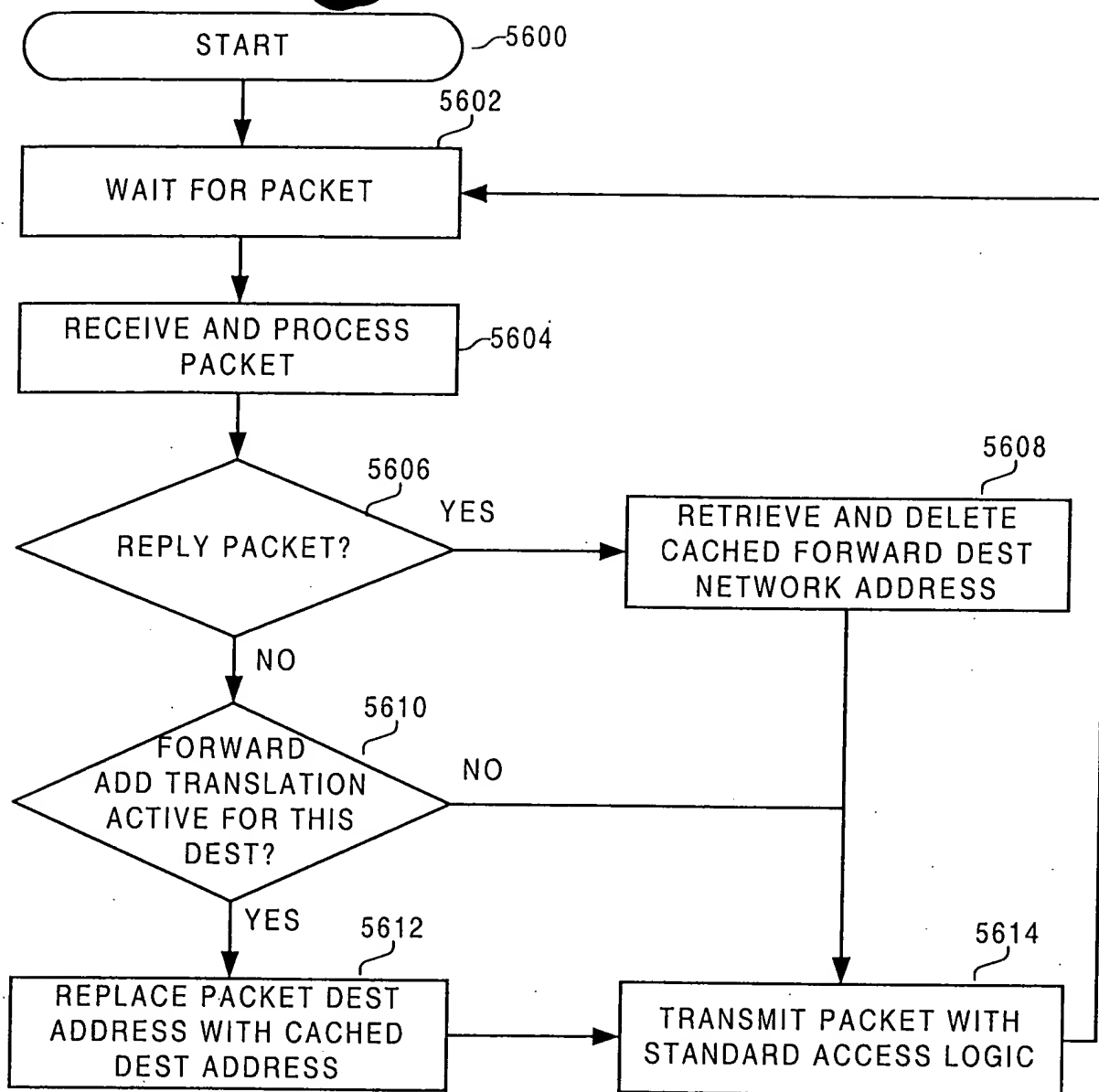


FIG. 56

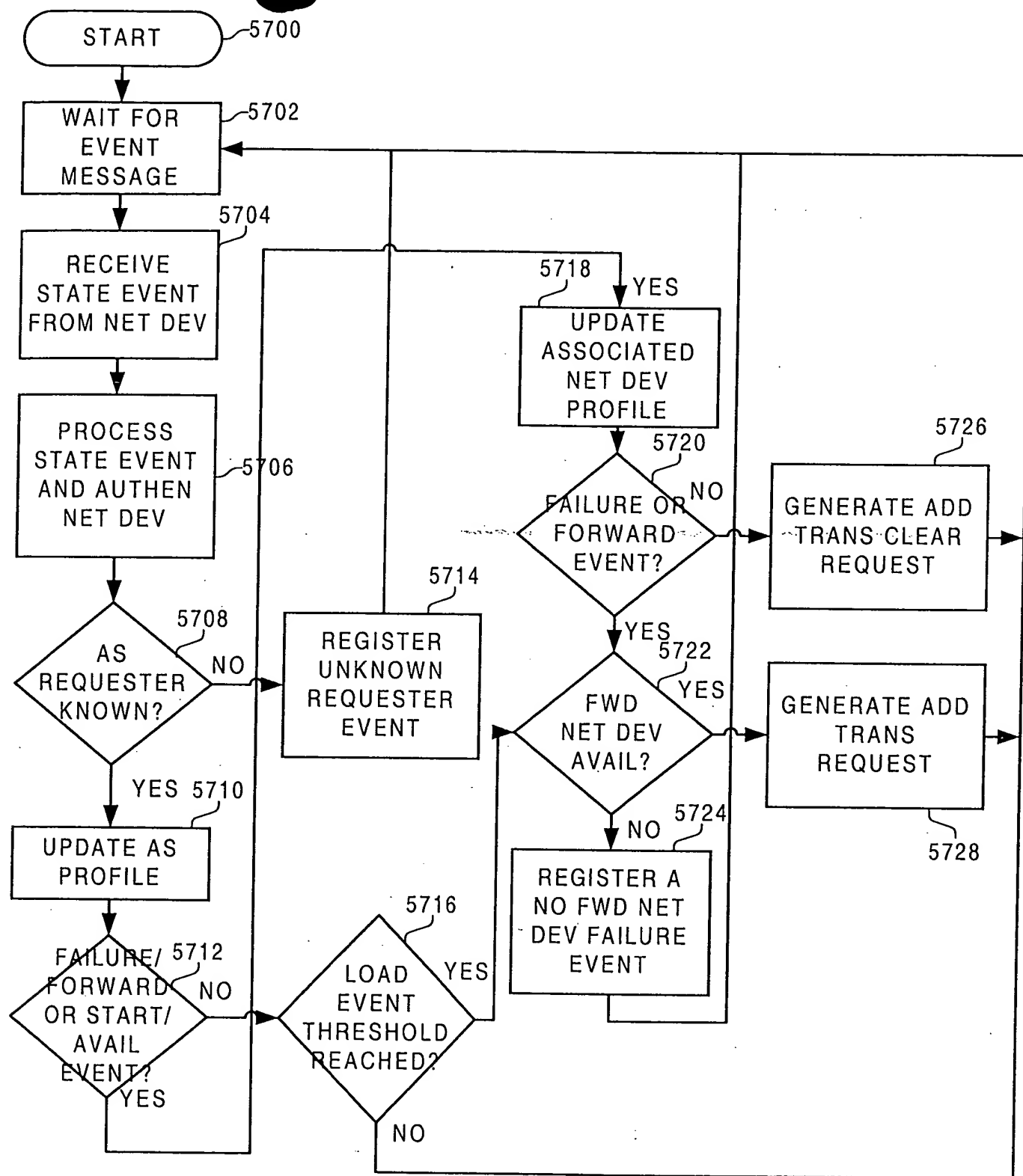


FIG. 57

09576300 052300

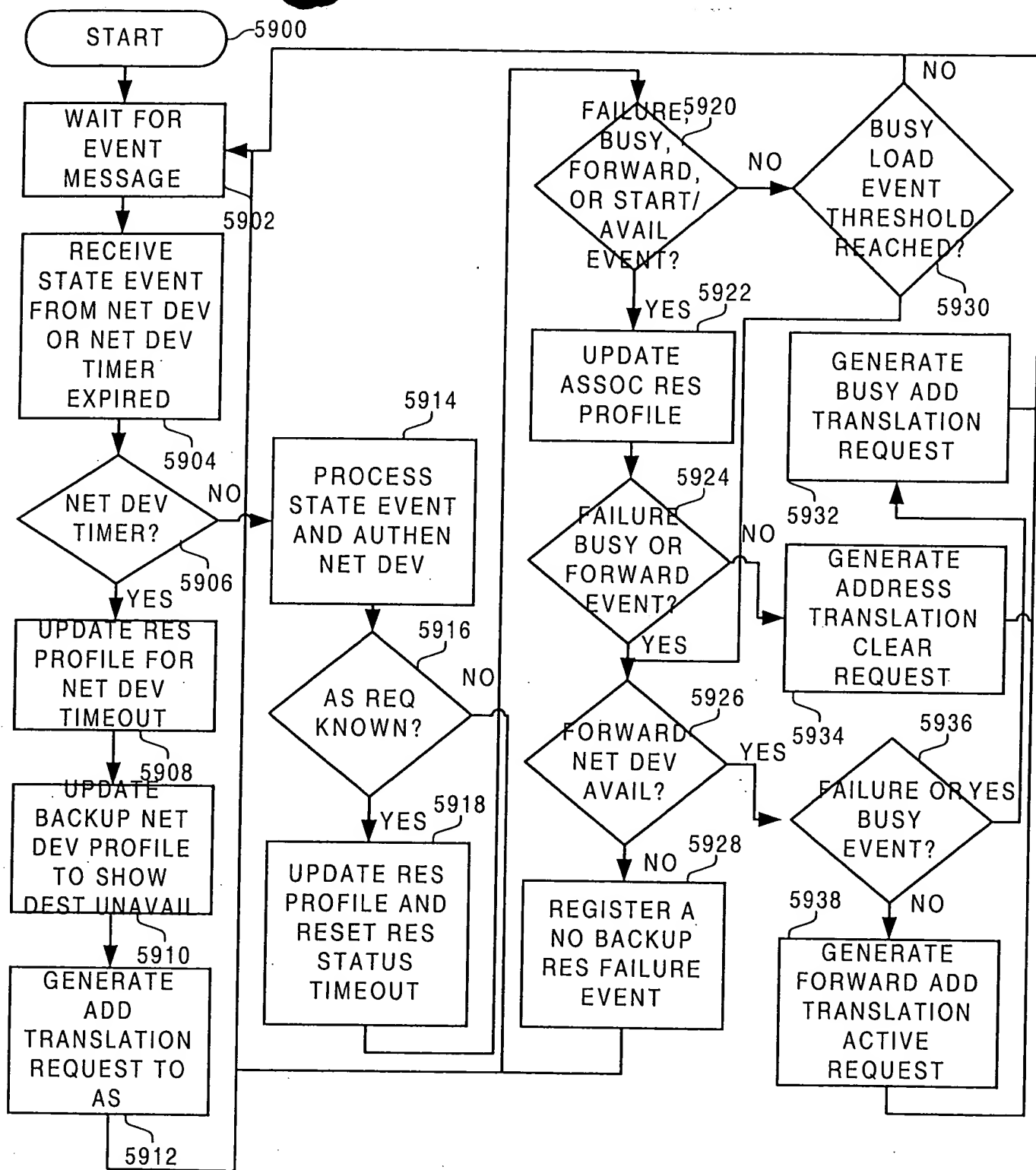


FIG. 59

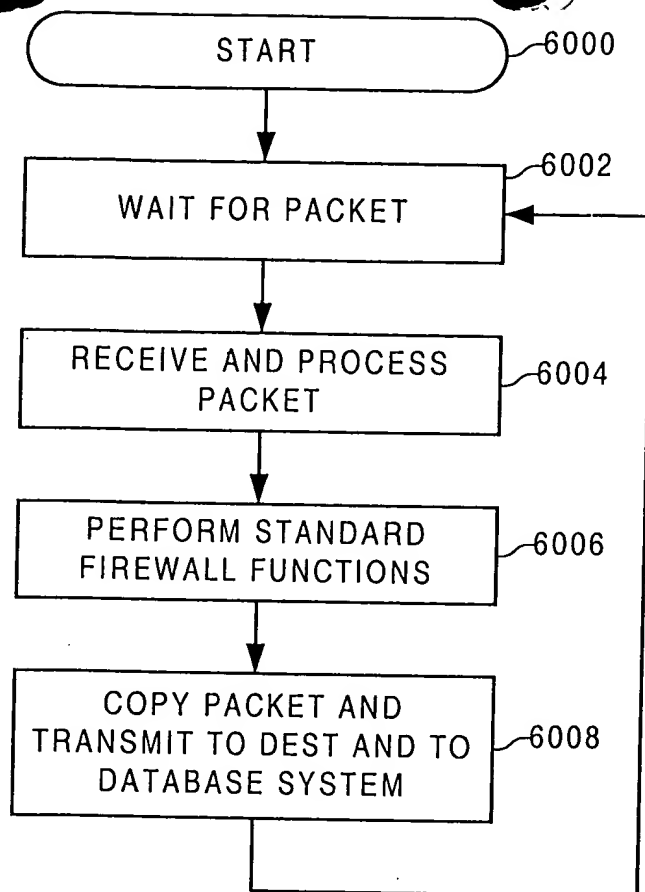


FIG. 60

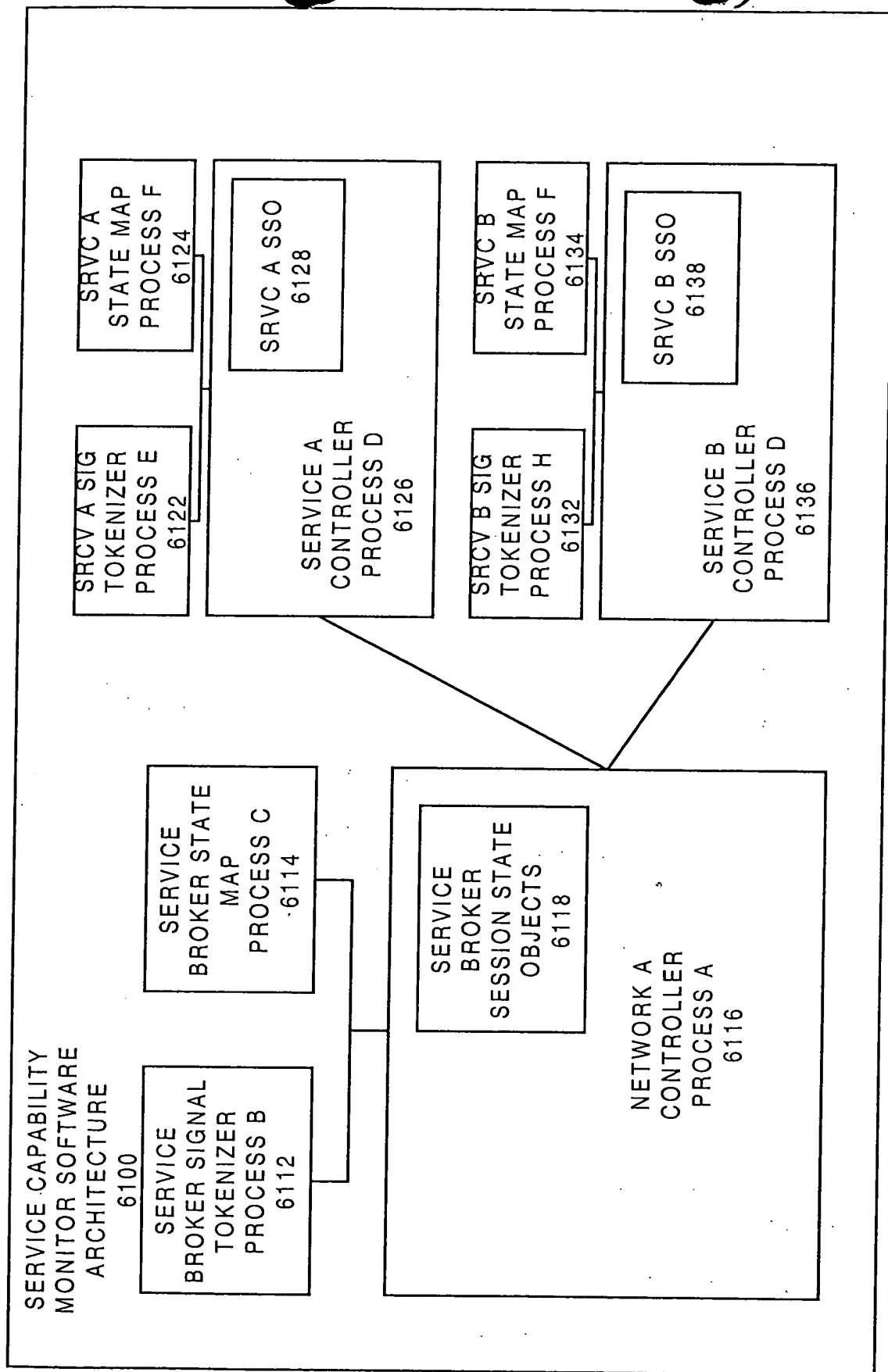


FIG. 61

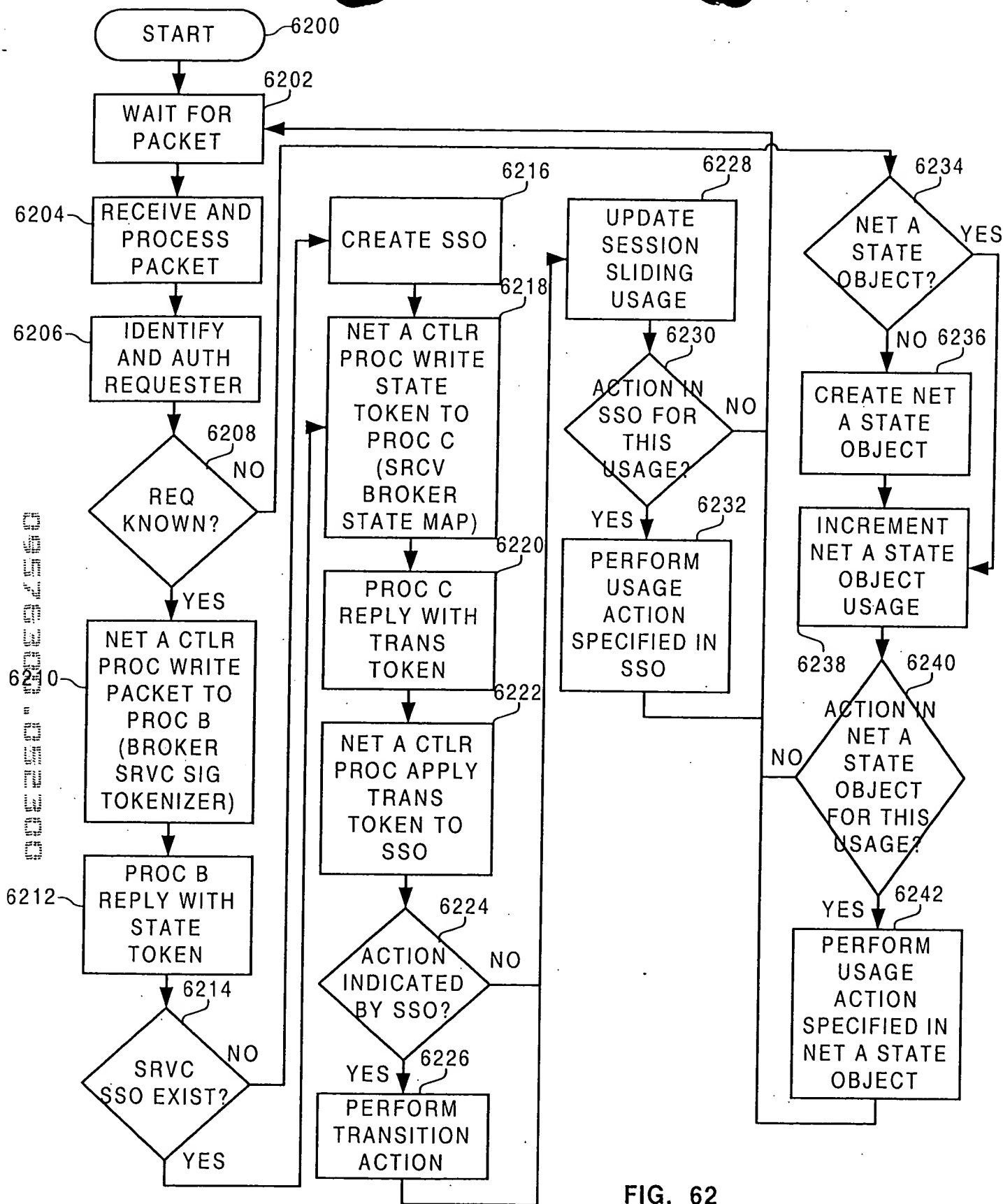


FIG. 62

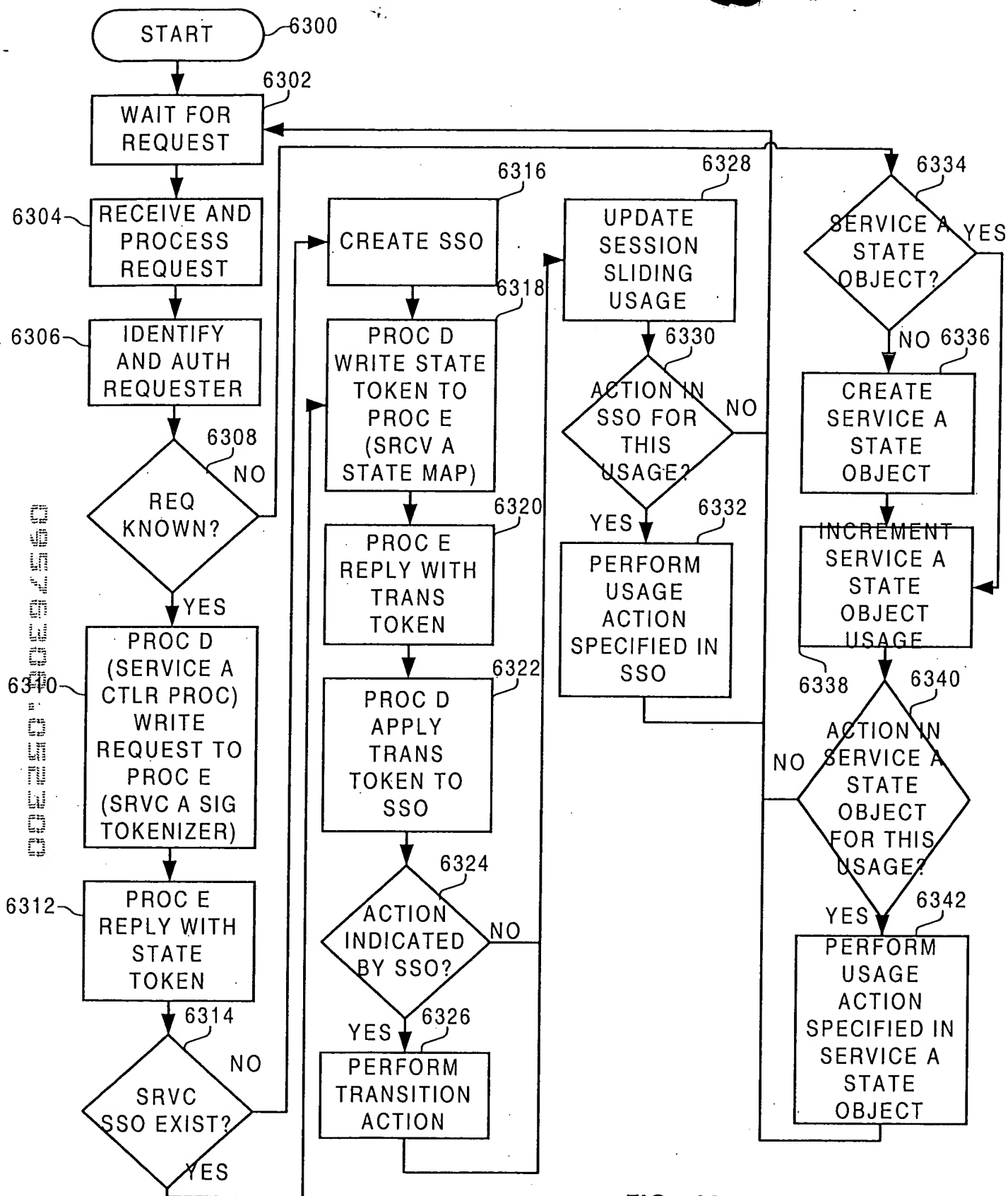


FIG. 63